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ANTIQUITY

A Quarterly Review of Archaeology



Edited by O. G. S. Crawford, F.S.A.

and

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Another interesting fact brought out by our discussion was that reviews, especially the best, often have a sterilizing effect. It is easy for a conscientious reviewer to embody in a review some idea or discovery of his own that should more properly be developed at greater length in the form of an article or book. To evade this is a temptation to a busy man ; for, by incorporating it briefly in a review, he patents his idea at the cost of the least trouble to himself. But if the idea is sound and really important, it deserves something better than to be thus prematurely born and forthwith, for all practical purposes, buried. Instances of this practice have been frequent in ANTIQUITY (the present writer is by no means guiltless). There may be cases where the practice is justified. Usually, however, a review should consist of information and criticism rather than of brilliant ideas.

Some change of policy is necessary if only on the grounds of space. Readers will have noticed that reviews are now printed in larger type. (In passing we may mention that this change was the direct result of a reader's criticism, for which we are duly grateful). But the pile of books awaiting attention grows steadily, and at the present rate prompt notice will become ever rarer, and many books will have to be consigned to the list of Books Received. (We take this opportunity of pointing out what must surely be obvious—that such brief mention is emphatically not in any way a condemnation. It simply means that, for one or other reason, the book in question cannot be reviewed in ANTIQUITY. Sometimes it is because the reviewer has failed to live up to his promise!).

In future it is hoped to publish more ' block reviews ' of several books that seem adapted for such treatment, rather in the style of other quarterlies (the *Quarterly Review*, for instance). The difficulty of carrying out this policy is, of course, to find someone to undertake the task. Experienced archaeologists are not too common in this country where the old book-learning still controls so many key-positions. In some spheres (such as that of Mesopotamia, for example) the number of potential reviewers, and even of writers of articles, is so small that each of them may receive several requests to review the same book. The labour of reviewing is considerable, and takes up time that should often be devoted to other work. Moreover, it is neither fair nor desirable (as a rule) that the same person should be expected to write several reviews of the same book.

EDITORIAL NOTES

Whether the change of policy here outlined will prove practicable is still uncertain. In any case it cannot come into effect at once, since there are still a number of reviews to work off. It will be our aim to produce this change, however, if we find it possible. Finally, we would ask those who are good enough to give us their help, to make their reviews as short as they can. The actual length must be left to reviewers themselves to decide ; and in so doing we would beg them *not* to look back (as some do) and find the *longest* review ever published, and then use it as a measure for their own, but rather to adopt a minimum length.



We referred above to the dearth of specialists in Middle Eastern archaeology. That is one of the causes of a weakness in the contents of ANTIQUITY. We are quite well aware that ANTIQUITY does not contain as much information as it should about the archaeology of the Middle East, but we hope that, if promises are fulfilled, several articles dealing with this part of the world will shortly appear. But in this country we are lamentably poor in workers in this field, and the dastardly and pointless murder of Mr Starkey has still further reduced their numbers. The consequence is that individuals are overworked, and it is not right to expect them to give to reviewing the time and energy that should go to research. (It would be interesting if figures could be compiled to compare the amount of money devoted to the endowment of field-work and research in, say, Palestine, Cyprus, Syria and Iraq by the different nations working there).



Amongst those workers are the inhabitants of the lands themselves. That is as it should be. Scientific archaeology was born in the North, and still maintains its lead there ; but science—true science—ignores national and racial frontiers, and the backward countries are waking up to the study of their own past. Egypt is beginning to produce its own archaeologists, one of whom will (we hope) shortly be introduced to our readers. Cypriote archaeology is at last being set in thorough order, thanks to the work of students of at least four different nationalities, and aided by the Government and by voluntary contributions. Much more might be done if more money were available, for the organization is all ready, and the workers are enthusiastic. The Nicosia Museum is served by a devoted staff. Its arrangement is admirable, and it needs only time and funds to become a model of its

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kind. The work of the late Sir Themistocles Zammit in Malta is well known and justly admired throughout the archaeological world.

In all these matters the relative functions of the home authorities (which in practice usually means the Treasury), the local Government and the voluntary contributor (whether an individual or a corporation) are not always equally balanced. If it be admitted that certain activities, such as excavation, are the particular function of individuals and societies, it must also be pointed out that others, such as the conservation of antiquities, in museums and out-of-doors, must be the prime duty of the Government. A certain minimum of such conservation is incumbent upon all civilized Governments. Yet there are still regions where those minimum requirements have not yet been fulfilled. For the moment we do not propose to say more on this subject, in the hope that certain developments may take place.

Our twelfth volume begins with this number and we venture to remind our subscribers of the renewal of their subscription. Already many have been good enough to send it, and the use of Bank Orders is adopted by others—to all these our thanks are given. To those who so far have not done either we would say that payment before we have to send out ‘reminders’ is very much appreciated and saves work in several ways. We shall be glad if they will find it convenient to make use of the form and envelope inserted in their December number.

In another way the help of our readers will be welcomed. We know that everywhere there must be potential subscribers who have not yet seen or even heard of ANTIQUITY (in spite of its world-wide circulation). We shall be glad to have the names and addresses (sent for convenience to 24 Parkend Road, Gloucester) of friends who they think would like to have particulars, which would be sent at once, and in special cases we are prepared to send a specimen copy.

Finally our thanks are once more expressed to all who enable ANTIQUITY to continue. We are much encouraged by the expressions of appreciation which show us that it is still received with unabated pleasure and interest.

The Burusho of Hunza

by E. O. LORIMER

THE small state of Hunza is the most northerly in British India. It consists for the most part of a close-packed mass of unscaled and unscalable mountain peaks over 20,000 feet, seamed by untrodden rivers of snow and ice; as might be anticipated, it is mainly uninhabited. Its frontiers march with Afghanistan on the northwest and with Chinese Turkestan on the north and northeast. But where the Hunza river has cut its way down from the Pamirs to join the Gilgit river and ultimately the Indus, there remain, clinging to the mountain sides, a few sloping, rocky terraces which, if water can be brought to them, can with diligence be rendered fit for human habitation. These oases of green amidst the barren desolation of rock and cliff and mountain peak are the habitat of a sturdy mountain people, the Burusho, speaking a difficult but extremely interesting language, of so great antiquity that no affinity between it and any other known form of human speech has yet been traced by the comparative philologist.

When D.L. was posted as Political Agent, Gilgit (1920-24) he made it one of his leisure tasks to collect material for a scientific study of Burushaski (the language of the Burusho) the result of which is a three-volume work*—grammar, texts and vocabulary—of which the last volume is just issuing from the press. In 1934—ten years after his retirement—we returned unofficially to Hunza, armed indeed with a considerable knowledge of the language but with no facility in speaking it, to live amongst the peasants and make such a study of their customs, agriculture, economics, etc., as amateur anthropologists might.

During our four years in Gilgit we had not failed to discover that the Hunzukuts (dwellers in Hunza) were the most attractive of all the likable mountain peoples of the Gilgit Agency, the most physically prepossessing, the most intelligent and the most trustworthy. All classes in Hunza gave us a warm welcome, from the Mir—who has

* *The Burushaski Language*, by Lt.-Col. D. L. R. Lorimer, Oslo, 1935 (England: Williams and Norgate) published by the Norwegian Institute for Comparative Research in Human Culture.

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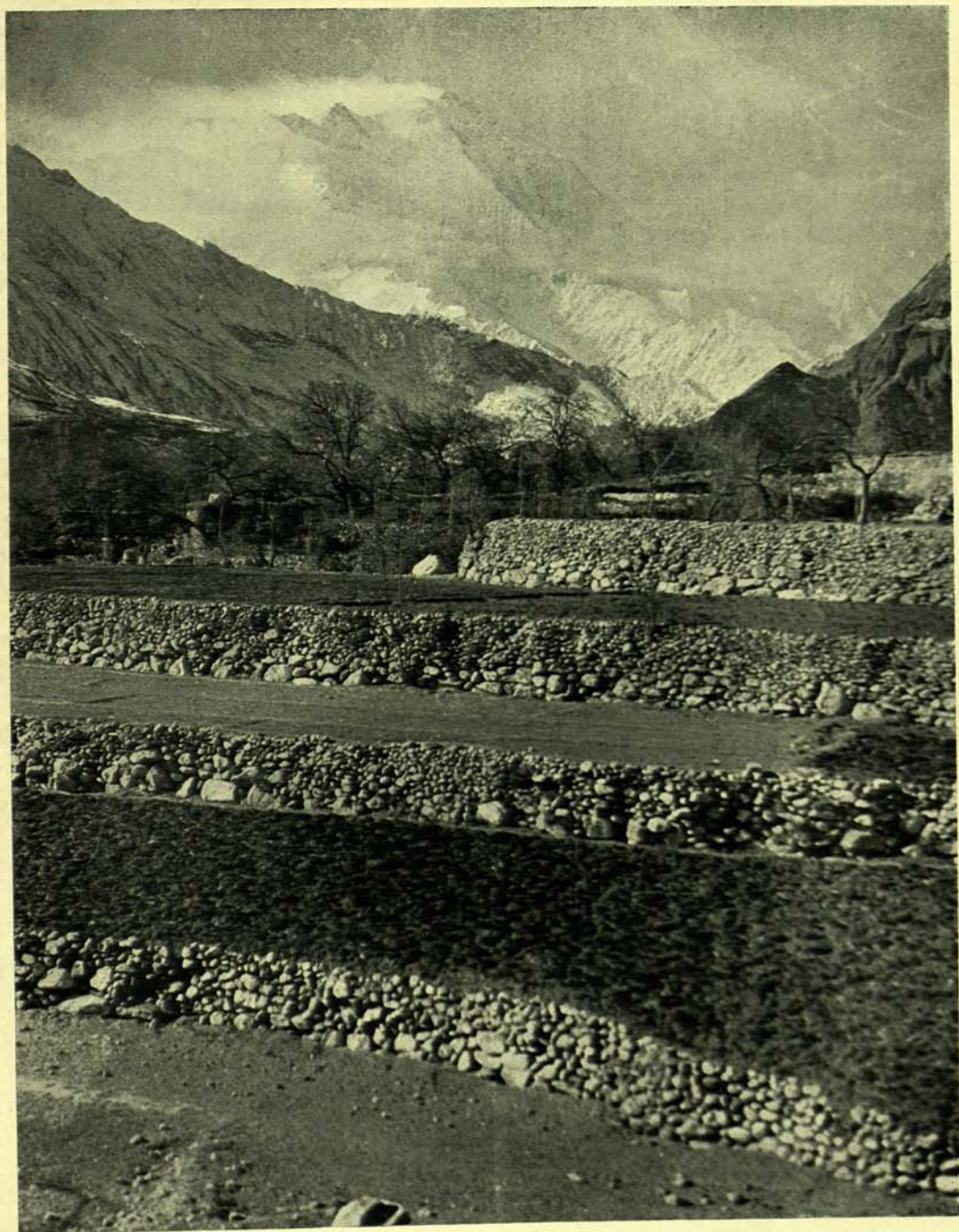
diagonally superimposed on each other, exactly duplicating some of the ancient smoke-holes recently unearthed in Central Asia by Le Coq. A large store-room about 6 feet deep runs the full width and height of the house and is entered by a door at the back of the central atrium. It is provided with a minute, unglazed, shuttered window, the only 'window' known in Hunza except in the houses of the Mir and the Wazir. The furnishings of the living room are simple but adequate. Two large sleeping benches, some 7 feet wide and 9 feet long, flank the side walls, and are raised 18 inches or so above the floor. The sleepers roll themselves in homespun blankets or padded quilts and sleep crosswise on the bench like parallel sausage rolls. One bench is reserved for men and the other for women. The hearth occupies the centre of the floor and is outlined by four stone kerbs. The sleeping benches, which serve by day as sitting places, are screened at head and foot by capacious cupboards, one of which serves the mistress of the house for her kneading trough and other utensils, another takes the form of a large bin with sub-divisions to hold the current supply of flour.

The normal cooking pots and oil vessels, lamp cruses, etc., are of hollowed soap-stone, often of gracefully irregular shape, reflecting that of the boulder from which they have been hewn. Gourds furnish the usual 'jugs', and wooden bowls, nowadays frequently turned on a lathe, the eating vessels. Wooden spoons and ladles are cut in one piece, the handles being formed by a convenient branch or twig. The delightful result is that no two pots, bowls, or spoons, are identical in size or shape. Unfortunately aluminium or enamelled iron vessels and galvanized buckets are finding their way into the country. We ourselves were, I fear, guilty of adding to their number and even introducing a few multi-service kerosene tins.

The greater number of field implements are still of wood, though the ploughshares are now usually shod with an iron shoe or tip, and a lucky family may have acquired an iron spade or hoe or a five-pronged iron fork. A small community of ultimately Indian origin, the Béricho, lives amongst the Burusho and supplies the music for their polo and dancing and the blacksmithery of their simple ironwork: the shears, the rude sickle, the sharpened scrap of iron that serves as razor.

The sharpened stone or ibex horn, which till very recently served for all necessary carpentry, is now replaced by the iron-headed adze which hacks out the steps on the log ladder and shapes the narrow planks for doors and cupboards. The true Hunza door consists of a set of

PLATE I



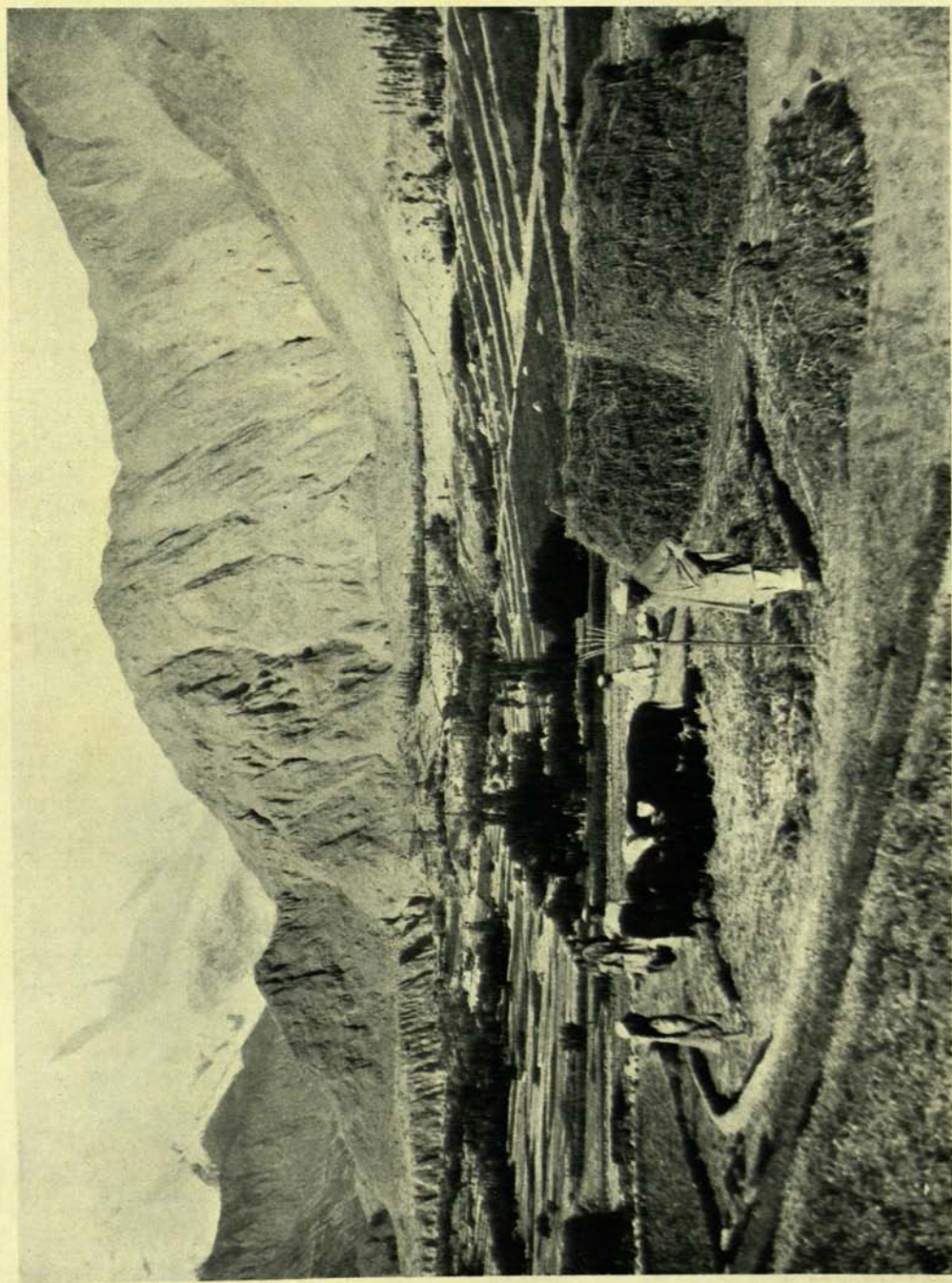
TERRACED FIELDS, HUNZA
pls. i-iv, *ph.* E. O. Lorimer

PLATE II



THE BASKET-MAKER, HUNZA (see p. 9)

PLATE III



PREPARING THE THRESHING FLOOR, HUNZA (see p. 12)
(note the pronged fork in the man's hand)

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care in rationing the year's supply (rationing begins the moment the first barley crop is harvested), scarcely a household we knew but was out of flour and out of potatoes weeks before the first barley was ripe, and was living solely on turnip tops, greens and edible weeds. 'Starvation Springtime' in Hunza evokes no poet's raptures, only a wailing of hungry babies who, as their mothers apologetically explain 'are too small to understand', and a tightening of the belt by those who do; but never a complaint. How these hardy people exist and work and smile—and keep on smiling—on a diet which no Minister of Health would consider even 50 per cent. adequate in quantity or 10 per cent. adequate in proteins, is a mystery, and must represent a miracle of natural selection over centuries. There are no sick or ailing in Hunza; men, women and children are wiry, tough and fit, and a fair proportion live to a ripe and honoured age, busy to the last about such tasks as suit their waning strength and valued for their experienced counsel, for no devilish inventions—cinemas, wireless or machines—have created a gulf between the generations.

Harvesting processes are extremely simple. When barley or wheat is ripe, the adults of the family turn out and pull up the shallow-rooted crop by hand, laying the swathes in neat rows to dry. Even when a sickle is used, it is used to pull with, not to cut. As soon as a suitable field is bare, it is flooded, and a circular (more rarely a rectangular) space is enclosed by a small mud wall four or five inches high. When the ground is soft but no longer wet, the whole family, down to the tiniest toddler, forms in line and marks time systematically over the surface to level it. After three floodings and tramlings the new threshing floor is as smooth and even as a hard tennis court. Two neighbouring houses sometimes share a threshing floor which becomes the focus of family activity till the last sheaf is gathered in. The cut crops are stacked conveniently near, and a small quantity of corn is spread on the centre of the floor. Then while Grandfather with his beautifully graceful five-pronged fork throws in more grain from time to time, the team of five cows, loosely lashed together by their muzzles, is driven round by man, woman, boy or girl in turns until the threshing is complete (PLATE III). The person in attendance on the trampling beasts has a switch in the right hand and in the left a wooden bowl as 'dung-dish' in which all excreta of either type are conscientiously collected, not only because the Hunza folk cannot afford to waste an ounce of manure but equally because they are too fastidious to tolerate the fouling of their food. Great was the contempt of our Hunza

THE BURUSHO OF HUNZA

companions who came down with us to Kashmir to observe peasants ploughing with *oxen* (whose wants could be less completely met) and without a dung dish !

When the corn is fully threshed, the winnowing begins in cooperation with a light breeze. Next the winnowed grain is passed through a coarse sieve (*barakbèsh*) whose mesh is composed of thin leather thongs which retain any particles of straw, and it is finally tossed in a finer sieve (*gherbèl*) which retains the grain and lets the dust through. The grain is then loaded into great skin-sacks and carried off to store. The due amount required for seed-grain is set aside first, and not the utmost extremity of hunger would induce a Hunza peasant to encroach thereon. Next, emergencies are budgeted for—births, weddings, dues such as rent (if any) and hospitality, which includes deaths in *other* homes, for relatives and friends would be disgraced if a bereaved family had themselves to bake during the first seven days of mourning. What then remains, represents the year's supply.

Ripe millet is treated by being beheaded, and the ears may then be threshed by cows or beaten with poles according to quantity. The buckwheats are beaten only, even small children merrily cooperating half in fun, half in earnest to show their prowess.

Grain for current use is carried to the mill in sacks or bags of skin. The mill-house is a picturesque cube of stone and mud situated beside a convenient irrigation channel. It may possess one wheel or two. The wheel is a vertical oblong of tree trunk, fitted with 10 or 12 wooden wings ; the lower end of its axis is supported on a horizontal pole, the upper fitted into a central hole in the upper millstone. The water is led on to it by a steeply sloping hollowed log. The inside of the mill, lighted only from the door, is fitted with a cross rafter built into the walls on to which the hopper is ingeniously hung by a forked segment of tree. The hopper itself consists of a section of log, tapered and hollowed out. Attached by a string to the small tray below the aperture in the base of the hopper, is a loose clapper which is gently agitated by the rotation of the upper millstone on which it rests, this shakes the tray and encourages a steady flow of grain. The flour as ground is ejected into a hollow trough. Near by, a wooden pole, impaled on a horizontal wooden pin, projects up through the earthen floor. Each end of the pin rests on a 'Heath-Robinson' pile of stones and a simple adjustment of its height regulates the position of the lower millstone and thus the coarseness or fineness of the flour desired. The mill, the loom and the comparatively new-fangled lathe are the only

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'machines' known in Hunza, and the mechanism of all three is so simple that parts can be replaced, repairs or adjustments effected, by any intelligent child—and we met no *unintelligent* Hunza child.

Anyone desirous of doing so can acquire a weaver's skill, and in our village of some 200 families there were seven or eight expert weavers. The loom-pit is a hole in the ground, 2 feet wide and deep and 2 feet 4 inches from back to front, with a stone bench at the back. Two horizontal poles balanced on stones a couple of feet above the ground at either side carry the heddles, etc. Here the weaver sets up his home-made loom of ingeniously simple construction worked by four treadles in the bottom of his pit. While he works, the owners of the wool sit by and wind his bobbins. A skilful weaver can make the nine yards of narrow homespun required for a man's cloak in a day and a half. The loom-pit occupies fully half the width of the 'street' and when being used forms the centre of a shifting group of cheerfully gossiping passers-by.

Goat's hair is woven on an even simpler upright frame, a forked piece of tree supplying the single shed required.

Turning is a rarer accomplishment than weaving, and our village boasted only one lathe-master. Like the loom the lathe is set up in a pit. The person desiring a bowl supplies the necessary rough-hewn block of wood (apricot or vine root preferred) and the motive power required to turn the horizontal bar, on to one end of which the wood is spiked. The turner crouches alongside with a selection of small curved chisels which he rests on an adjustable tripod to steady his hand (PLATE IV).

There is no room to tell of all the simple yet ingenious household utensils which the Hunzukuts conjure from the scanty resources at their disposal: the spliced wooden bow faced with plates of ibex horn and beautifully curved; the boys' catapult bow with double string of horse sinew, for scaring birds; the double-chambered wool-container made of rowan bark; the small vessel like an ash-tray which steadies the woman's rotating spindle and is moulded from the refuse of the apricot kernels left after the oil has been expressed. Not a shred of anything is wasted in Hunza. What cannot be eaten or turned to use—even the shell of the apricot kernel—is gratefully seized on as fuel for the pitifully small fire that cooks the bread and vegetables. Fires for mere heating are an undreamt of luxury. Hence the draught-proof house is essential, for at 7-8,000 feet, with snow mountains all round and a temperature of 19° Fahrenheit, the 'Great Cold' is

THE BURUSHO OF HUNZA

sufficiently severe. Happily winter is short, two or three months at most, and for the rest of the year day and night are spent mainly out of doors.

The social culture of the Burusho of Hunza is as high as their material culture is primitive. Three centuries of Islam—they are now Ismaili heretics, having been Shiahhs until three or four generations ago—have not induced them to veil or despise their indomitable women, nor to abandon the wholesome tradition of exogamy between their different clans in favour of first-cousin marriage. They are freer from superstition and fanaticism than any people east or west of whom I have heard or read. Whatever be the esoteric teaching of the Ismailis of which Professor Ivanov might tell, it concerns the Hunza peasant as little as the homoeousian controversy disturbs the mind of the British schoolboy. He goes his way in cheerful confidence that hard work, fair dealing, kindly affection and generosity must be as well pleasing to God the Merciful, the Compassionate, as ritual prayer or ceremonial fast, and his dreams are not broken by over-anxious fear of Hell or hope of Heaven.

The fastidiousness and personal cleanliness of the Hunza peasant are remarkable. Close packed amongst the crowd at festivals or sitting on the threshing floor amongst the workers, or entertained in their hospitable houses, we were never distressed by human exhalations or molested by parasites. The drinking water is guarded with scrupulous care from pollution by man or beast. Men and women cooperate without embarrassment or restraint and no work is taboo for either sex, though for obvious reasons the heavier jobs of wall-building, irrigation and ploughing fall more naturally to the man, and the care of infants to the woman. But as soon as the father is allowed to handle his child, he will carry the baby proudly and tenderly out for its first airings, while boys and girls alike play with and watch over the toddlers.

Again and again, in face of the high morality and unquenchable spirit of the Hunzukuts, we were ashamed to think of what in our vaunted civilization 'man has made of man'.

Verulamium

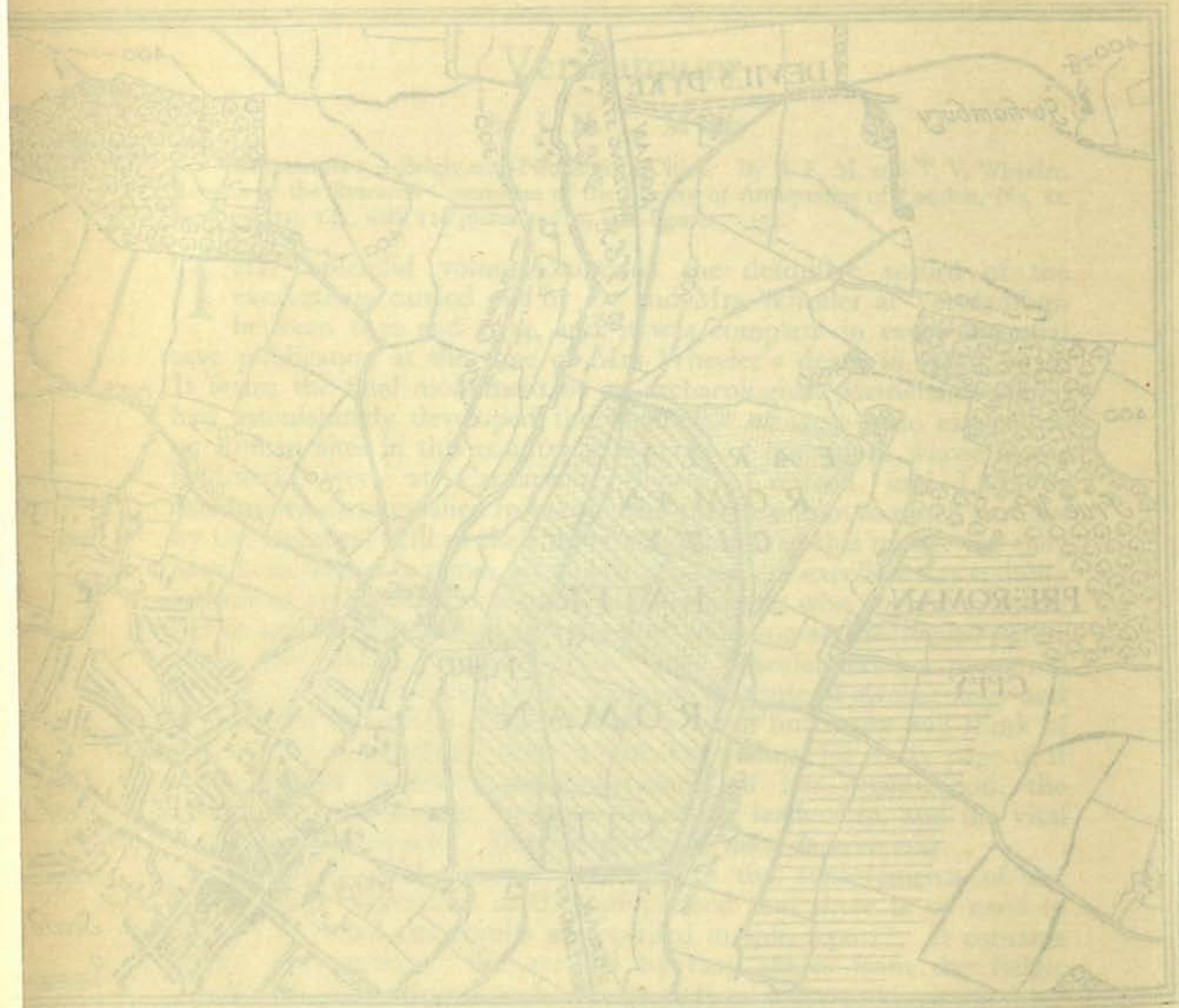
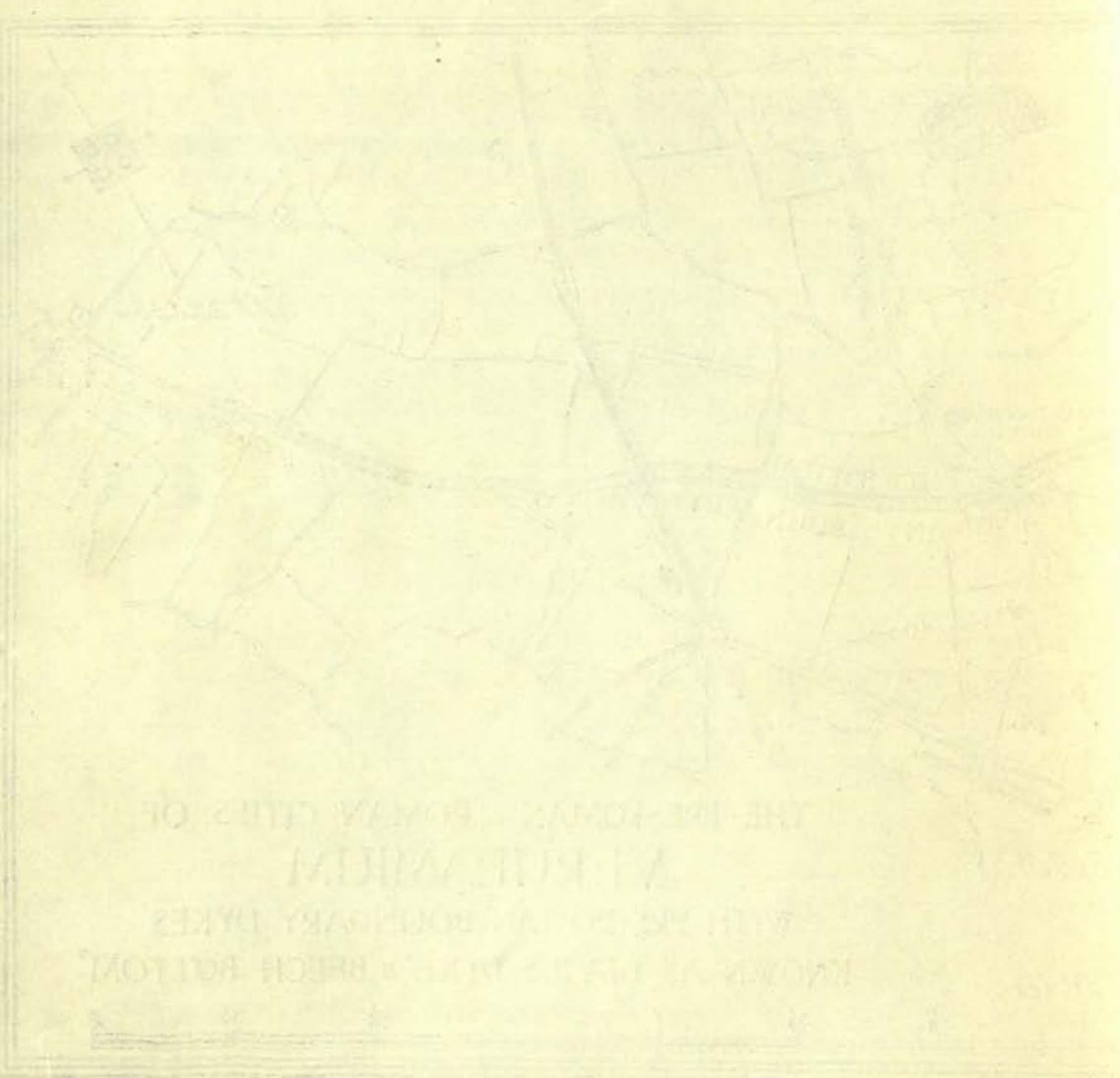
by J. N. L. MYRES

VERULAMIUM : A Belgic and Two Roman Cities. By R. E. M. and T. V. Wheeler. Reports of the Research Committee of the Society of Antiquaries of London, No. XI. 1936, pp. XII, 244, with 120 plates and 49 text-figures. 15s.

THIS splendid volume contains the definitive record of the excavations carried out by Dr and Mrs Wheeler at Verulamium between 1930 and 1934, and it was complete in every essential save publication at the time of Mrs Wheeler's death in April 1936. It forms the final monument of an archaeological partnership which had astonishingly developed the technique of large-scale excavation on Roman sites in this country in a series of operations whose major landmarks were at Carnarvon, Brecon, Caerleon, and Lydney; excavations distinguished from others of their kind not so much perhaps by the technical skill of their direction, though in this matter too they have been second to none, as by their pre-eminent excellence as training schools of archaeological method to the students who flocked to them, and as aids to right thinking by the ever-widening archaeological public which they did so much to create. Mrs Wheeler has her memorial in many places: publicly in the London Institute of Archaeology and privately in the hearts of all who knew her; but many will think of this volume as peculiarly instinct with her genius, for every page of it bears witness to the comprehensiveness of her organization, the discipline of her energy, the patience of her leadership, and the vital sureness of her touch. *Non extinguetur in nocte lucerna eius.*

So much publicity was accorded to the achievements of the Verulamium excavations as they progressed that there is no need to recount in detail the results as recorded in this report.¹ It contains indeed no surprises. We are led by easy stages from the Belgic *oppidum* at Wheathampstead, discovered as a by-product of these excavations, and now saluted as the best available claimant to be the stronghold from which Julius Caesar drove Cassivellaunus in 54 B.C.,

¹ See, for example, *ANTIQUITY* 1933, VI, 133-47; 1934, VII, 21-35.



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to the later Belgic earthworks of Prae Wood on the hillside above the first Roman city, and thence *via* the first city, whose ramparts may have been erected after Boudicca's sack in A.D. 61, to the later city partially overlapping it. Here the second century defences with their monumental gates, the triumphal arch, the unique triangular temple, and the houses and shops of the *insulae* explored in the southern part of the town are described with an admirable blend of terseness and lucidity, and, for completeness sake, a brief account of the theatre and adjacent temple, already fully published elsewhere,² is added. The whole is illustrated with plans and photographs whose technical skill and artistic excellence are beyond all praise.

We have thus, in the main story of the creation and decay of one of the greatest cities in the northern provinces of the Roman Empire, a cross-section, as it were, of urban life through three and a half of the most crowded and controversial centuries in the history of Britain. The chief impression which this story must leave on the reader is one of astonishment at the accuracy with which it reflects the general economic trend of those centuries as known from the historical sources for the age. Verulamium, with its movement down the hillside from squalid pre-Roman beginnings to sporadic ribbon development along the Watling Street ; with its magnificent second century expansion marked by the splendid defences and public buildings of the golden age of Hadrian and Antoninus Pius ; with its utter economic collapse in the third century when its ruinous aspect must have ' borne some resemblance to a bombarded city ' (p. 28) ; with its brave but futile rehabilitation in the Constantinian age, its rapid subsequent decline, shown by the shrinkage of the dwindling population towards its central area, and its final extinction in Saxon times, seems not so much to epitomize as almost to caricature by over-emphasis the salient features of urban history in the western Roman Empire.

But if the outlines of Verulamium's history are now clear and conform in the main to the pattern which we should expect, there remain many points which will have to be cleared up before the tale is complete or indeed really intelligible as a piece of local history. Five seasons' work conducted even on the scale of Dr and Mrs Wheeler's excavations, and even allowing for their masterly selection of informative spots for examination, has not been enough to probe the secrets of so huge a site or to answer all the questions which leap to the mind on

² *Archaeologia*, LXXXIV, 213-61.

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the perusal of this report. Belgic Verulamium, for example. We have it on the best authority that a city set on a hill cannot be hid, but it must be admitted that Dr Wheeler's 'Belgic city' on the hill above Verulamium remains after all his efforts a somewhat clandestine affair. Are we really to believe that this unimpressive group of earthworks in Prae Wood with its shadowy continuation to the south, with not a single identifiable hut-site and no intelligible western boundary was by itself the centre of Tasciovanus' power, the seat of a Belgic empire soon to dominate all southeastern Britain? Of two things at least we may be certain: his palace was not there and his mint was not there; had they been, we can be sure that Dr Wheeler would have found them.

Even the ascription of the Prae Wood occupation to so early a date as the time of Tasciovanus (the turn of the first centuries before and after Christ) would appear on close inspection of the evidence to be rather precariously founded. It is based in the last resort on the absence of Italic and south-Gaulish fabrics among the small group of sherds—parts of only twenty-five vessels—occurring in the primary silt of the main dyke, and while the extreme danger of arguing negatively from so small a group is rightly emphasized by Dr Wheeler on pp. 44-45, this proper caution has disappeared on page 46 where we find that 'in summary . . . the ceramic evidence converges upon a date at the end of the first century B.C. for the Belgic earthworks in their original form'. The character of the later Belgic deposits in these ditches seems to be responsible for this change of emphasis; they are dated by Dr Wheeler (p. 45) 'with fair certainty to A.D. 10-35'. Both these dates are really arbitrary: in particular there would seem no valid reason for fixing the lower limit precisely at A.D. 35, and if someone was to urge that this deposit could with equal plausibility be dated A.D. 25 to 43, it would be very rash, with our present knowledge of Belgic ceramics, to deny the possibility that he was right. If so, however, the primary period for the preceding earthworks may be as late as A.D. 25, and their association with Tasciovanus who, on Dr Wheeler's chronology, died about A.D. 10 (p. 7) becomes perhaps rather possible than probable. But whatever date we choose for their construction, it is difficult to regard Dr Wheeler's use of the word 'city' for the Prae Wood ditches as anything but a misnomer, nor, if this really was the whole 'city', is it easy to understand the early grant of municipal status to its Romanized successor.

Now if we ask ourselves what a 'Belgic city' was like in the first half of the first century A.D. in Britain, there is one good example to

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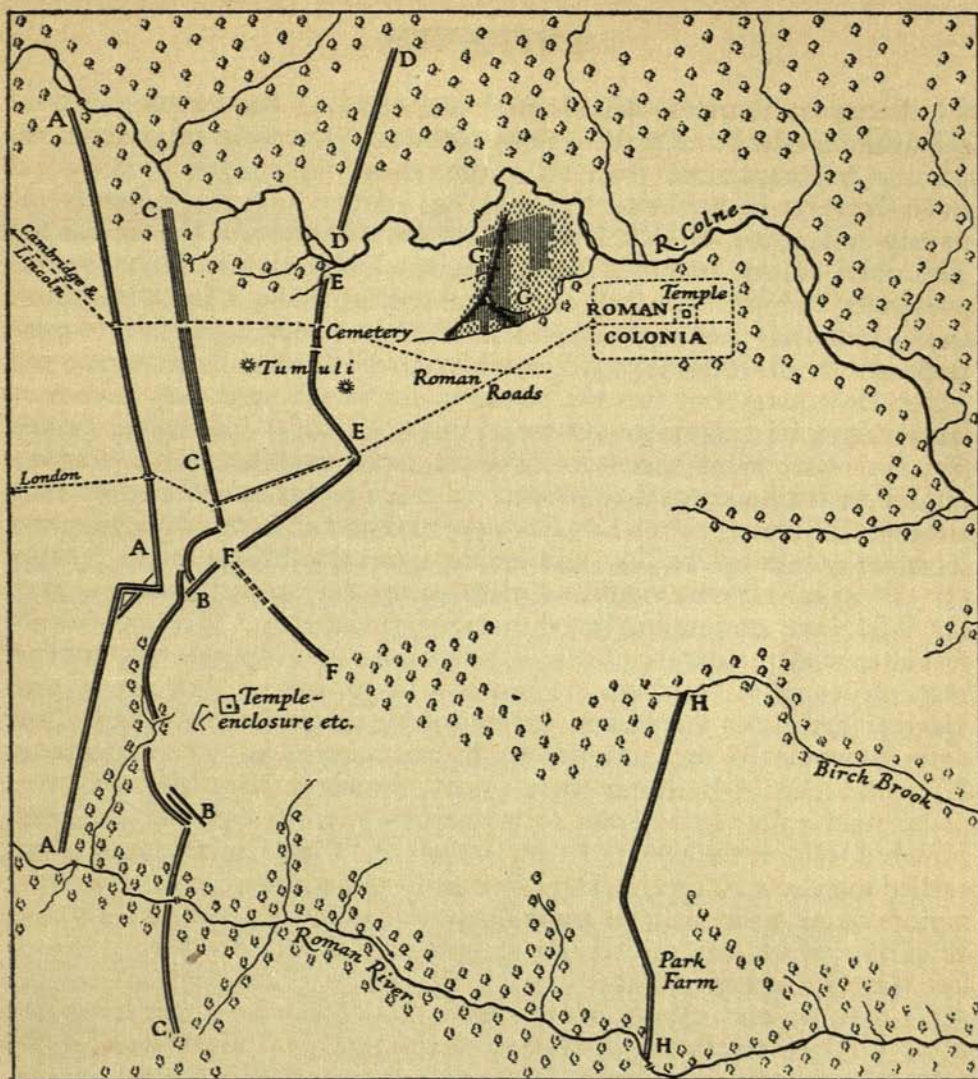
guide us—Camulodunum, the capital of Cunobelinus, and the immediate successor to Verulamium as the centre of the Belgic power. This appears to have consisted, as the recent excavations and surface field-work have shown, of a large central nucleus of solidly massed huts, pits, and ditches originally protected by a great dyke (G-G on the plan, p. 21) which was totally obliterated soon after the Roman Conquest.³ This nucleus was surrounded by a wide area of country itself demarcated and enclosed by several more extensive lines of travelling earthworks, and probably containing a number of less important and satellite *kraals*. Now while it is true that at Colchester, as at Verulamium, excavation has not yet struck either the king's palace or his mint, the Colchester complex has at least a recognizable and thickly populated centre, in some part of which they presumably lie. But Belgic Verulam, as revealed by Dr Wheeler, has no such centre, for by no stretch of imagination can the Prae Wood ditches be equated with the dense occupation on the Sheepen Farm site at Colchester. Is Prae Wood, perhaps, only an outlying element of a once larger whole? and, if so, where can we look for other and more central elements of it? No suggestion of course can be other than a guess to be proved or disproved by the spade: but a glance at Dr Wheeler's plans will reveal one obviously possible area which his operations never touched. While he was at some pains to date the Fosse earthwork which bounded the 'early Roman city' on the west and north, and has tied it down closely to the years following Boudicca's revolt in A.D. 61, the area which it enclosed, though optimistically labelled 'early Roman city' on his plans, remains a complete blank in which not even a trial trench has been dug. Until we know something about the interior of this 'early Roman city' it can hardly be said that the hopes of finding a central nucleus for Belgic Verulamium have been exhausted; and it may be worth noting not only that Belgic pottery in considerable quantities occurred in all Dr Wheeler's sections of the Fosse, but also that, of the eight Belgic coins found during the excavations, no fewer than five came from the 'early Roman city' while only one turned up in Prae Wood. On the present evidence, in fact, we are bound to regard the possibility that the main Belgic occupation and the first Roman city overlapped or coincided on the ground as still an entirely open question.

³ I have to thank Mr C. F. C. Hawkes both for information on several features of the Colchester complex, and for the plan (p. 21) which he has drawn to illustrate them. He is in no way responsible for the use which I have made of this information.

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It may perhaps be added that on general considerations it would not be at all odd if the earliest Roman occupation was in fact a continuous and haphazard development of the central Belgic *kraals*; nor need we be surprised at the apparent absence of pre-Roman defences for this central area. At Colchester, too, there was no apparent sign of the innermost line of Belgic dykes before the excavations of 1930 began, and so effectively had they been slighted after the Roman conquest that it took two seasons' work before their true course and nature were understood. If a similar slighting occurred at Verulam we should expect as little trace of the earlier defences now as there was at Colchester before 1930, and the first settlers on the site after the Roman conquest may well have remained entirely unprotected until after the unhappy experience of Boudicca's rebellion. But if the site itself remained the same before and after A.D. 43 it would explain far more easily than the sequence suggested by Dr Wheeler the early grant of municipal status to a Verulamium which showed a real continuity with the native past. It would also provide not only an interesting parallel to the probably continuous evolution into Roman towns of some other Belgic centres like Silchester or Winchester, but also a further illustration of that delayed action in the establishment of deliberately planned Roman cities which Dr Wheeler's own work at Maiden Castle has so recently demonstrated. All this, however, must remain for the present mere speculation. Until the 'early Roman city' at Verulamium has been explored our knowledge of the transition from Belgic to Roman conditions there must necessarily remain inadequate. And it is with something of a jolt that we remind ourselves that the definitive settlement of this problem was to have been one of the main purposes of Dr Wheeler's work.

When we reach the second Roman city we can be whole-heartedly grateful for the brilliant excavation, description and illustration of the defences and of some eleven acres of buildings in the interior. The picture here provided of the rise and fall of civic life in southern Britain is vivid, convincing and indispensable, and the sidelights on local conditions supplied by, for example, the unusual building with a cellar, the votive deposits in the triangular temple, and the grisly remains of a sausage factory, will give food for thought to specialist and amateur alike. The discussion of the dated mosaics and their coloured reproduction—Mrs Wheeler's superb stone-for-stone painting of the horned sea-god (p. 144) throws a fresh light on the versatility of her accomplishments—breaks fresh ground in a subject which, for all its



AAA Grymes Dyke

BB Contour Dyke

CCC Triple Dyke and rest of extensions of BB

DD Moat Farm Dyke

EE Lexden Dyke

FF Extensions of EE

GG Sheepen Dyke and excavated 'Inner Camulodunum' site

HH Berechurch Dyke

'Inner Camulodunum' area...excavated unexcavated

Dykes
1 kilometre

Roman Roads
1 mile

GENERAL PLAN OF BELGIC COLCHESTER

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familiarity to Romano-British students, has long been crying out for scientific analysis. Dr Wheeler makes an overwhelming case for placing the construction of the defences in the second century; it must however be said that the Hadrianic date which he presses seems hardly warranted by the evidence which he gives. Almost all the material for fixing it comes from deposits which only provide a *terminus post quem*, and while the bulk of these deposits may be at latest Hadrianic they do include a few pieces which could be later; notably a Samian fragment by CINNAMUS (p. 58) dated by Dr F. Oswald between 130 and 150. How long after this the pot to which it belonged may have been broken and its fragments scattered, it is of course impossible to say. On the other hand there is really no close evidence for a *terminus ante quem* at all, except that a repair in one of the gates had already been executed before a coin of Lucilla (147-183) had gone out of use (p. 72). This really tells us nothing, and a date about the middle of the century for the whole system would seem to strain the probabilities less than Dr Wheeler's preference for the reign of Hadrian. This too would fit better with the dating of some elements in the contemporary internal reconstruction of the town. Here and there, indeed, the report provides evidence for a reluctant surrender by the authors of a Hadrianic date for some of these buildings in the course of its preparation. Thus the plan of Building III, 1 (p. 90, drawn in 1931) dates its first phase to the first half of the second century, while the text (*ibid.* presumably written four years later), assigns it 'a constructional date not earlier than c. A.D. 150'. Here it is only the accidental occurrence of a piece of cut-glass Samian among material otherwise mainly Hadrianic or earlier which has forced the acceptance of the later date. One is left with the uneasy feeling that Dr Wheeler's Hadrianic date for the walls may depend simply on the accidental absence of similar shards in his sections across the defences and the gates. A very close parallel might be quoted from the Aldborough (Isurium Brigantum) excavations of 1935. There too a Hadrianic date for the walls at first seemed certain from the underlying deposits which were predominantly Trajanic and earlier; but the presence of two or three possibly Antonine shards (including, as here, one of CINNAMUS) has convinced the excavators that the defences of Isurium cannot be safely dated before the reign of Pius.⁴

When we turn to the end of Verulam's story, the report bristles with

⁴ Report shortly to be published in the *Yorks. Arch. Journal*.

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unsolved problems. In spite of the documentary evidence for the survival of the city in some sense into the first half of the fifth century, the hope of finding any substantial remains of the Verulam which St. Germanus visited in 429 has remained no more than a hope. Not only so, but in all the areas excavated in the southern part of the town both the structural evidence and the coin-finds make it clear that urban life hereabouts had for all practical purposes ceased long before the days of St. Germanus : ' after the Constantian renaissance there is no evidence, throughout the eleven acres [excavated], of the building or re-building of a single wall ' (p. 29). Yet, as the excavation of the theatre and the adjacent temple abundantly showed, the central area of the city was still very much alive in a rather parasitic fashion in the later part of the fourth century and its inhabitants were treating both their public buildings and their money with that light-hearted abandon which seems to have prevailed everywhere in the last days of Roman Britain. Was this shrinkage gradual or sudden ? How much of the city shows this extended occupation ? Was there a hard and fast line between the deserted and inhabited areas or any attempt to improvise defences for the latter ? These are questions not only of local but of general historical importance, and Verulamium provides perhaps the best chance anywhere in Britain of illuminating the problems they imply. But Dr Wheeler has no answers to them in the present report, and we can only hope that he will soon find the opportunity to take up again this very important part of his unfinished task.

One further matter may be briefly mentioned. The necessity of forcing the account of this extensive campaign of excavation into the limits of a single manageable volume has compelled the authors to perform miracles of compression and selection in the display of their material. But our admiration for the judgment which they have shown in this most difficult of tasks can be pardonably blended with the regret that it was necessary at all. Take the pottery for example. The Belgic series from Wheathampstead and Prae Wood have been rightly illustrated in full and these, supplemented by the Colchester material which should shortly be published, will become the standard authority on Belgic ceramics in this country. But with the Roman pottery things are different. The Samian, of which quantities must have come from closely dated deposits, has not been published at all, and this is the more unfortunate in view of the doubts about the value sometimes accorded to Samian for dating purposes which have recently

Were the Giza Pyramids Painted?

by A. LUCAS

SO far as is known to the writer, the only published studies of this subject are one by himself, made many years ago,¹ and a more recent one by Professor André Pochan,² though references to the appearance and colour of the stones are not uncommon. Thus both Jomard³ (who climbed the pyramid) and Maspero⁴ (who apparently did not climb the pyramid, but relied upon Jomard's description) both say that the portion of the casing of the pyramid of Chephren, still remaining in place at the apex, is coloured reddish in patches by lichen, the identification of this apparently having been made by the well-known botanist Delile, who accompanied Jomard on his climb up the pyramid.

Professor Pochan, who also climbed the pyramid of Chephren, and examined the stones at the apex, states that he saw lichen, but only on the north side, where the colour was blackish, and that the stones in general are of a reddish-brown colour. No proof that the black was indeed lichen is given, and the very dry situation would seem to make the presence of lichen improbable, unless it is growing on the patches of bird excrement that Jomard noticed, which, however, are not likely to be confined to the north side. An examination for lichen by a mycologist would seem to be desirable. Professor Pochan also examined a large number of broken fragments of casing stones found on the ground, from both the pyramid of Chephren and also from that of Cheops, and states that the colour of the face (which can be identified by the angle of slope) was generally reddish-brown, though in some instances, brownish-black.

¹ A. Lucas, *The Blackened Rocks of the Nile Cataracts and of the Egyptian Deserts*, 1905.

² A. Pochan (Professeur de Sciences au Lycée français, Le Caire), 'Observations relatives au revêtement des deux grands pyramides de Giza', *Bulletin de l'Institut d'Egypte*, 1933-1934, XVI, 214-220.

³ M. Jomard, 'Description générale, de Memphis et des pyramides', in *Description de l'Egypte, Antiquités*, 1818, II, 80, 82.

⁴ G. Maspero, *Histoire ancienne de l'orient classique*, I, *Les origines*, p. 371.

WERE THE GIZA PYRAMIDS PAINTED ?

The writer has seen the colour of the apex of the pyramid of Chephren only from the ground, from where it appears to be brown, but he has examined, at the foot of this pyramid, and also at the foot of the pyramid of Cheops, stones now lying on the ground that, from their sloping surface at one side, must originally have formed part of the casing of the respective pyramids. One visit to the pyramids was made by the writer in company with Professor Pochan, when a large number of specimens of stones, with one sloping coloured face, were taken for subsequent examination in the laboratory, so there cannot be any doubt that the specimens examined were similar to those described by Professor Pochan. The results of the examination will be given later.

Although Herodotus, Diodorus, Strabo and Pliny all describe the Giza pyramids, none of them makes any mention of the surface being painted.

Professor Pochan quotes Philon de Byzance, as cited by Letronne, for the statement that some of the stones of the pyramids have the transparency of glass, while others are greenish, light yellow, or red, as though they had been painted. None of the stones, however, is transparent, or like glass, and none that the writer has seen is greenish, or yellow. The red colour will be discussed later.

Several Arab writers allude to the pyramid of Mycerinus as being coloured or painted, but, as pointed out by Professor Pochan, this manifestly has reference to the red colour of the granite casing blocks.

Professor Pochan states that a chemical examination of the red coloration on the exposed parts of the casing stones from the pyramids of both Cheops and Chephren proved it to consist of oxide of iron, and that, for a depth of about half a millimetre from the surface, there is a layer harder than the rest of the stone, and of a different nature, containing calcium sulphate (gypsum), silica and probably organic matter. From this he deduces that the outsides of the two pyramids were originally coated with a thin layer of siliceous gypsum plaster, probably containing organic matter, which was painted with a pigment of red ochre (oxide of iron).

The writer is in entire agreement with the results of Professor Pochan's analyses, namely, that the red colour is oxide of iron, that the coloured surface is harder than the rest of the stone and that calcium sulphate (gypsum), silica and organic matter are all present, but he cannot agree that the two pyramids in question were originally coated with a siliceous-gypsum plaster painted red, the colour, as well as the

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calcium sulphate and the hardness, being merely the result of the ordinary desert patination.

In the writer's article on the desert coloration of rocks he stated that 'the step pyramid at Saqqara, the three large and various small pyramids of Giza all show a well-defined browning of the outer surface', and 'although the browning is more pronounced on the outside, it is present also on the less exposed surfaces, as in the cracks and crevices between the stones, and, even several metres deep down the open passages, such as that in the third pyramid⁵ at Giza'. 'The brown coloration of the surface of the pyramids at Saqqara and Giza . . . is largely a desert coloration, the colour being in great part cemented fast to the stones; in some cases, however, the colour is intensified by the presence of dust or other loosely adherent material'.

At that time the writer had not made a special study of the coloration of the original casing stones of the pyramids, though he noticed that 'that part of the casing of the second pyramid,⁶ which still remains, is usually browner than the rest of the pyramid, from which the coating has been removed'.

The ordinary desert film has been described by many students⁷ and it is generally agreed that the red coloration is due to oxide of iron, the black to oxide of iron, or oxide of manganese, or both, and the intermediate shades to mixed oxides of iron and manganese. A difference of opinion, however, exists whether the constituents of the film are derived from the stone itself (all the ingredients occurring in the stone), or from deposited dust, though the greater number of investigators (including the writer) believe that they originate from within the stone.

In addition to oxides of iron and manganese, the writer found that the desert film also contains alkalies, alumina, calcium compounds

⁵ That of Mycerinus.

⁶ That of Chephren.

⁷ W. P. Blake, *Trans. American Inst. of Mining Engineers*, Sept. 1904. Von G. C. Du Bois, in *Tschermak's Min. u. Pet. Mitt.*, xxii, section 1, Vienna, 1903. Fraas, *Aus dem Orient*, Stuttgart, 1867, p. 477. G. Linck, *Jenaische Zeitschr. f. Naturwissenschaft*, 1900. A. Lucas, *op. cit.* J. P. Merrill, *Rocks, Rock-Weathering and Soils*, p. 256; *Bull.* 150, U.S. Geological Survey, 1898, p. 389. J. C. Moulden, *Trans. American Inst. of Mining Engineers*, Feb. 1903. Obrutschew, *Verh. russ. Min.-Ges.*, St. Petersburg, 1895, p. 229; *N. Jahrb. f. Min. Geol. u. Pal.*, 1897, II, p. 469. Overweg, *Zeitschr. der Deutschen. Geol. Ges.* 1851, p. 100. G. Schweinfurth, *Zeitschr. f. Ethnologie*, 1903, 5, pp. 798-822. C. G. Seligman, *The Older Paleolithic Age in Egypt*, pp. 138-141. J. Walther, *Die Denudation in der Wüste*, 1891. Wheeler, *Peterm. Mitt.* xxii, p. 337. K. A. Zittel, *Palaeontographica*, 1883, xxx, 58-59.

WERE THE GIZA PYRAMIDS PAINTED ?

(including the sulphate-gypsum), magnesium compounds, phosphate and silica, all of which he believes originate from within the stone, in which they all occur. The writer's conclusions as to the method of formation of the patina, given in the article referred to, are as follows :—

(1) All rocks are more or less permeable to water.

(2) Most rocks contain traces of alkalies, alumina, calcium, iron, magnesium and manganese compounds and silica.

(3) These compounds are all soluble, to at least some slight extent, in pure water, this solvent action being much increased by the presence of certain other substances, such as carbon dioxide and phosphoric acid and by a relatively high temperature.

(4) Water in the form of occasional rain, or of frequent and heavy dew, or morning mist, gains access to the rocks, even in desert regions, and dissolves the various soluble constituents.

(5) The solution thus formed is brought to the surface by capillary attraction, and the water is there evaporated, leaving the solid matter.

(6) Some of the solid matter, such as the compounds of iron and manganese, is subject to further alteration at the surface of the rocks, whereby insoluble oxides are formed.

(7) A hot climate and small rainfall are necessary for the formation and preservation of the patina.

As a result of his recent examination of the specimens from the casing stones of the pyramids of Cheops and Chephren respectively, which are about 4800 years old, the writer found that the patina, although more coloured (redder or blacker as the case may be) than that of the stones of the present surface, from which the casing was stripped not more than about 1200 years ago, contains the same ingredients, namely, oxide of iron (red), oxide of manganese (black), calcium sulphate, silica and various other ingredients. The stone below the patina-covered surface also contains the same ingredients in small proportion. In the course of the work it was noticed that practically white, or only very slightly yellowish, quartz pebbles became covered with veins, streaks and patches of red oxide of iron when repeatedly strongly heated in an electric muffle furnace, hence heat alone can form a red patina on the surface of a stone containing iron compounds. No evidence of lichen could be found on any of the coloured patina examined. The presence of oxide of manganese is not mentioned by Professor Pochan, and the organic matter found by him is only that naturally present on any surface exposed to the atmosphere and not an organic material used as an adhesive with paint.

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In this connexion it may be mentioned that the quotation from Reisner made by Professor Pochan relative to the use of an adhesive for cementing together the finely powdered quartz that constitutes the body material of faience, is quite irrelevant and appears to have been misunderstood, owing probably to Professor Pochan's imperfect acquaintance with English.

Hudd⁸ gives the following analyses of the patina on the pyramids of Cheops and Chephren respectively :—

Oxide of Iron	Pyramid of Cheops	Pyramid of Chephren
	%	%
In surface patina	0·20	0·45
In layer under patina	0·15	0·10
In interior of stone	—	0·05

The hardened surface of the patina-bearing stone is explained by Ball⁹ as follows :—

‘ The result of dew and light rains falling in the night is that a film of water remains on the exposed rock surfaces for several hours, during which time it dissolves small amounts of carbonates and silicates in the rocks, only to deposit its solid contents again on evaporation in the morning ; and the deposited matter, being in a molecular condition, is left in the minutest pores of the rock, converting, for instance, the superficial layer of a soft sandstone into a hard skin more resembling quartzite ’ and ‘ . . . the top of Gebel el Tih is covered with limestone blocks having a hard brown skin formed in this way ’.

Linck¹⁰ explains the indurated surface of rocks in the same manner and the writer has independently come to the same conclusion, namely that the hardened surface is merely one of the results accompanying the formation of patina.

⁸ A. E. Hudd, ‘ The Great Pyramids of Gizeh ’, *Proc. Clifton Antiq. Club*, VI, p. 22.

⁹ J. Ball, *The Geog. and Geol. of West-Central Sinai*, pp. 176–180.

¹⁰ G. Linck, *op. cit.*, p. 8.

A 6th century German Settlement of *foederati*

Golemanovo Kale, near Sadowetz, Bulgaria*

by GERHARD BERSU¹

IN the fertile region between the Danube and the Balkans occur numerous Byzantine fortified posts, which are shown by occasional finds of coins to date mostly from the sixth century. All have a common form in that skilful use has been made of natural features of terrain, such as isolated mountain-tops or practically isolated spurs, so that with a minimum of artificial strengthening they have considerable defensive power. A favourite situation for them is at points where narrow canyon-like valleys of the streams that flow into the Danube have afforded good natural advantages.

From the military standpoint these sites can easily be divided into two groups, A and B, according to their topographical situation. To the first belong those which occur on the great natural trade-routes, and, like a modern *Sperrfort*, rake the roads with a commanding view over the surrounding district. The second and much more numerous group consists of posts situated off the trade-routes, often so much concealed by the lie of the land as to be invisible from the great roads.

Owing to the lack of accurately based topographical knowledge, and since no organized archaeological service exists in Bulgaria, we are at present without any map of these sites, or any useful detailed survey of the ruins in their present condition; and it is exceedingly probable that only a small fraction of the available material is known. Frequent finds of Byzantine gold coins have been made in the sites, and they have become the happy hunting-ground of the treasure-seeker. Most of the numerous gold coins on sale in shops may have come from them.

Until recently none of the posts had been excavated, either in the region under consideration or in Bulgaria generally. In 1934 Iwan Welkow made the first extensive excavations, near the village of Sadowetz in the Vit valley, on the site of the fort Sadowsko Kale.²

* Sadowetz lies 40 km. south of the Danube, 50 km. north of the Balkans. On the map it may easily be found by drawing a line from Sofia northeast to Plevna. Then it will be seen 105 km. north of Sofia, 25 km. southwest of Plevna, practically on the connecting line at its point of intersection with the Vit.

¹ Translated by Professor R. G. Austin.

² See *Germania*, 1935, XIX, pp. 149 ff. for an account, with many illustrations.

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This work, which is not yet complete, produced valuable and beautiful finds ; and it led to the investigation of the fort Golemanovo Kale³ on

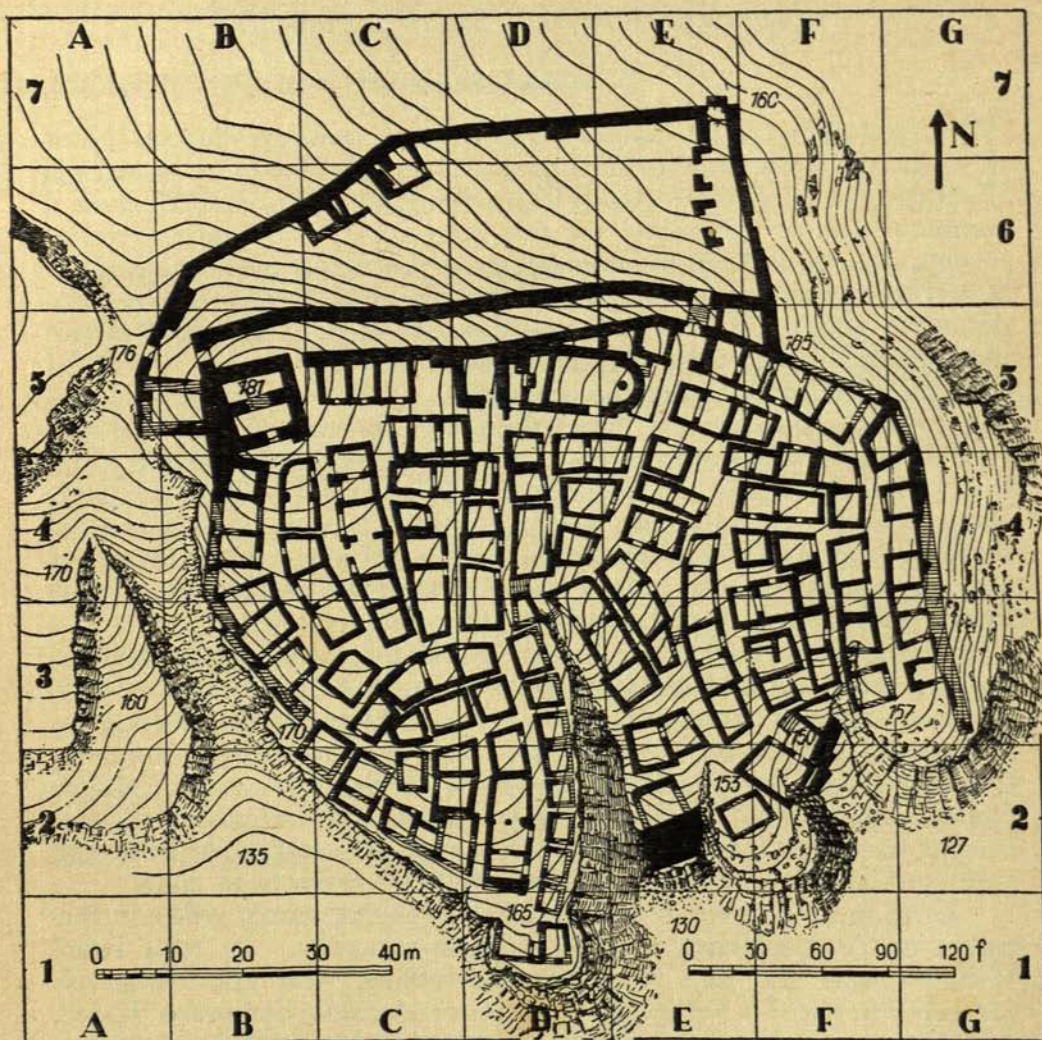


FIG. 1. PLAN OF GOLEMANOVO KALE (2ND PERIOD), 1:1000. Interval between contours, 1 metre

the opposite bank of the river, which was begun in 1936 as a joint

³The name is modern. Kale=castle; Golemanovo comes from the name of the former landowner, Golemanov.

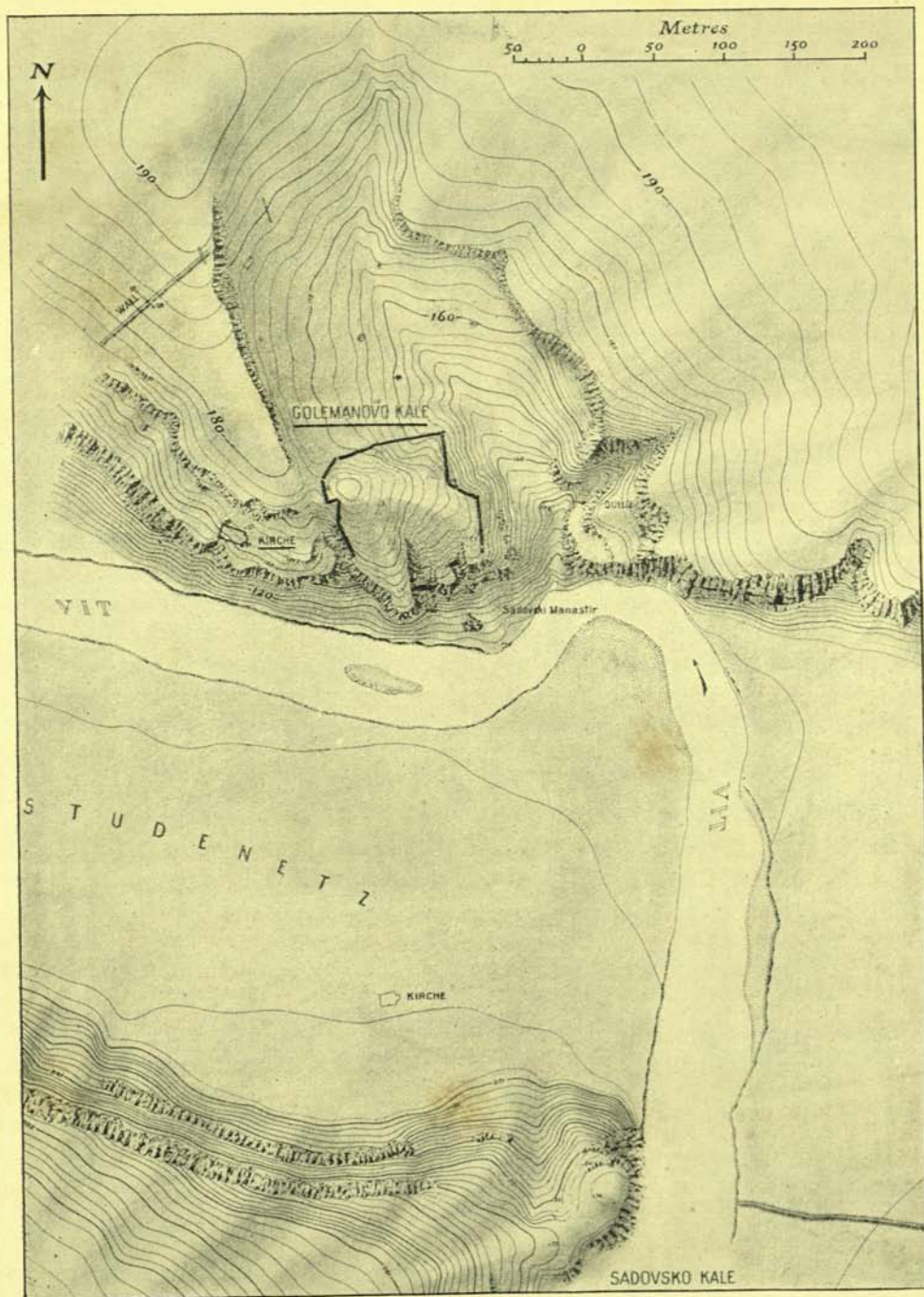


FIG. 2. PLAN OF NORTH BANK OF THE VIT VALLEY, 1:5000
Distance between contours, 2 metres

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undertaking of the Bulgarian and German Archaeological Institutes, under my direction, and completed in December 1937.

Golemanovo Kale shares common topographical features with Sadowsko Kale in the Vit valley, Nakuhovo Kale near Bežanovo, 6 km. to the south, and Gradište near Dragana, a similar distance still further south (both these latter are in the Kamenitza valley⁴). A broad meadow below the sites provides fine pasture-land, while the fertile soil of the undulating table-lands around is excellent for ploughing; on several sides a natural defence is formed by sheer precipices, 30-50m. deep. Only a portion of the circuit needs to be fortified by walls, but at the weakest points there were often several, one behind the other. The gates always lie at the ends of these walls. From the table-lands, which are deeply cleft by the river, the sites are only visible at very close quarters. Since the rivers follow a very winding course, these forts cannot be taken as barriers on a road running along the valley; on the contrary, the old trade-routes to the Balkans and to the passes towards Thrace run at some distance away, on the table-lands. Golemanovo Kale is one of the larger sites of group B, while Sadowsko Kale is one of the smaller ones. But there is no great difference in size between any of them, and Golemanovo Kale may be taken as typical of this group (B) of Byzantine fortified posts.

The sort of terrain aimed at may clearly be seen⁵ from the contour-plan (FIG. 2) and FIGS. 8-12. The table-land to the north falls away in a steep wall of rock towards the plain of the Vit valley, and a gap in this wall is formed by a valley running southward from the table-land with similar steep slopes. Close in front of the entrance to this little valley a spur rises roughly parallel to the precipice where it falls away towards the river: so that a practically square space results, some 100 m. each way, jutting out slightly towards the Vit valley, connected with the table-land only at its southwest corner, and easily accessible from there. The west side of this square is almost completely fortified by the natural precipice (FIG. 10), while to the south only two narrow, steep slopes between the three brows of cliff afford a means of access, and a difficult one at that (FIG. 8). The southern portion of the east side is likewise protected by precipices (FIG. 11), and only the north side needed a stronger defence (FIG. 9).

⁴ The remaining fortifications shown by Welkow (*Germania*, l.c., fig. 1) belong to periods other than the 6th century.

⁵ For this remarkable new topographical map of the surroundings, as well as the contoured plan of the site itself, I have to thank the Bulgarian Geographical Institute, Sofia.

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This is not the first settlement of which traces remain, as may be expected in a fertile region that invites settlers. In late neolithic times the peoples of the Gumelnitza culture⁶ were numerous in the whole area bounded by the later walls, as well as in the upper part of the little valley and apparently also on the table-land. This settlement met its end by fire. The district was next occupied sporadically in the period immediately preceding the Scythian invasions, and together with a little Celtic pottery there were also found fragments of some of the blue glass rings so characteristic of the latest Celtic period. From the end of the third to the end of the fourth century A.D. an open settlement occupied the northern slope and the area immediately adjacent to the innermost wall on the north, as well as the whole of the little valley. This was an industrial settlement, as is shown by the abundant iron slag and ovens. The pottery is throughout of the usual Roman provincial type. Like its neolithic predecessor, this settlement too was burnt; its disappearance may probably be connected with the events leading up to the battle of Adrianople, or with the invasions of the Huns. In the fifth century and at the beginning of the sixth there was no further occupation. In Justinian's time, the fortification with which I am here dealing was constructed; this, after a fire (period I) was immediately rebuilt (period II), burnt again about A.D. 600, and afterwards abandoned.

It was not until the twelfth century that the ruins of the site were again occupied, probably in connexion with the building of the monastery on the bank of the Vit (FIGS. 2 and 8). The tradition of the church in the settlement was continued, the dead were buried there, and probably also a small chapel was erected, of which a few traces have been found high above the débris of the Byzantine church. In the sixth century a settlement had been made on the ridges and the table-land to the west of the site, to which a church also belongs (PLAN, FIG. 2; these remains are not discussed in this paper). This open settlement, which had clearly used the protection of the fortified post, and which was inhabited by people for whom there was no more room within the walls, was destroyed, together with the fortification, about A.D. 600.

It can be seen (PLAN, FIG. 1) with what remarkable skill the position was strengthened in the sixth century by defence works. The kernel of the defence is the imposing Great Tower, occupying the most

⁶ Ion Nestor, *Der Stand der Vorgeschichtsforschung in Rumänien* (22 Bericht der Römisch-Germanischen Kommission 1932), Frankfurt (Main) 1933, 57. A detailed description of this culture is given there; its remains occur also in other ancient fortifications near the Vit.

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exposed position, measuring some 11 m. square. Its inner chamber is bisected by a wall, and has an entrance on the south side (B 5). Two to three metres of its original height are still *in situ*. If it was originally ten metres high, it would have afforded a wide view from its platform, without anything being visible of the rest of the fortified position lying beyond. In the second period of the settlement a bastion (of which remains still exist, A B 5) was added to the tower on the western side; this was the only important change made as compared with the first period.

From the Great Tower and its connected bastion three walls were built, each high above the other, to fortify the northern part of the site which was not protected naturally. They were carried square across the northern slope as far as the steep cliff on the east, and there joined a wall running north and south. They have no ditch in front of them. Against the lower wall, besides two ramps (B 6, D 6) which made ascent possible to the ramparts, three chambers were built, intended as a permanent shelter for the guard. One of them, at the bend of the wall, was built up in the form of a tower (C 6-7). The middle north wall has no adjacent buildings, so that between it and the third or inmost wall there is an open corridor (FIG. 3). To the defences of the third wall a tower (D 5) was added in the centre in the second period, and a ramp constructed to the west of it. At the eastern and western ends of these three walls there are narrow openings, only 1.70 m. wide, giving access to the inner quarter. Their narrowness, and the steps leading to them, show that they were intended only for men on foot and for cattle, not for wheeled traffic. The western gates were guarded by the Great Tower and the bastion. The lower eastern gate had a tower-shaped superstructure (E 7). This gateway led behind the east wall to the upper eastern gate (E 5-6). Between these gates are four hooked fragments of wall (E 6), with a wooden upper portion, below which ran the eastern entrance-way, at first sunken. This upper gate was likewise fortified by two towers, at the east end of the corridor and of the tower-shaped superstructure of the gate-chamber built on to the third north wall (E 5). In the east wall there was a slype gate, later blocked up (F 6). Following the lie of the land, and therefore presently making a sharp bend southwards, this wall then closed the inner quarter on the east as far as the precipice (G 3). At the bend there was another tower (G 5). This part of the wall, built on the narrow ledge of the cliff (FIG. 9) is now only in a fragmentary state. The western wall is in a similar condition; it begins at the southwest corner

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of the Great Tower, runs along the outermost edge of the precipice, and stretches southwards until the sheer line of cliff, 30 m. high and partly overhanging (FIG. 10) made any further artificial protection of the inner quarter superfluous (B 3). Probably the first building next to the Great Tower was also tower-shaped (B 4).

On the south only the foundations of the defence-works have been preserved. Since the ground falls away southward to the river (FIG. 8) in three projecting spurs (D 1, F 2, G 2), with insurmountable precipices, all that was needed here was to block the two deep narrow gullies between the cliffs with a wall (E 2, F 2). These two walls are built on the sloping ledge of the cliff, and the difficulties presented by the terrain can be realized by the extraordinary breadth of the foundations of the wall which bars the western gully (E 2). Very probably there was a slype-gate, leading down to the river, in the eastern wall.

There was no special preparation of the subsoil beneath any of these defence-walls; they are partly built on the rock, partly on clay, and nowhere have they any extra base to their foundations. Normally they are preserved in the surrounding débris to a height of 3 m., as compared with the old ground-level (FIG. 3). Their thickness varies between 2 and 1.5 m. Their construction shows the ordinary building-technique of Byzantine walls: layers of pieces of limestone alternate with a generous spreading of white mortar between two outer layers of small rough-hewn limestone blocks. The inequalities of the outer surface have been partly covered with a thick coating of the same white mortar, so as to present a smooth appearance. The method used betrays haste, and although the whole is well planned, from a technical point of view the details are unsound. As a result of inadequate foundations, large stretches of the walls have collapsed or been completely levelled. To judge from one block of the wall which has fallen in this way, the height of the first northern wall may be put at a minimum of 6 m. There were no lacing-courses of bricks or any bricks employed.

The space bounded by the first and second north walls (B-E 6), and the east wall, is free from inner buildings. It must have served to shelter cattle or the inhabitants of the open settlements when danger threatened. But the area to the south of the third north wall is all the more closely built up. Here the most noticeable thing is the outline of the church (DE 5; FIGS. 3-6 and 13, 14), backed as it is in such a curious way against the inner wall of fortification. The choice of this unusual position, which had many disadvantages, cannot be explained as due to the configuration of the land, nor has investigation of the

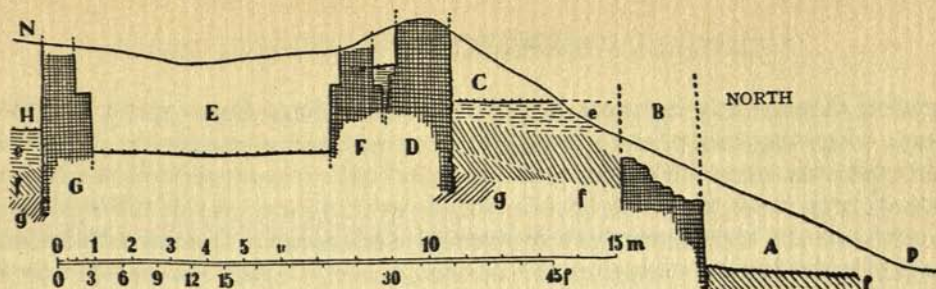


FIG. 3. CROSS-SECTION NORTH BY SOUTH, THROUGH CHURCH AND TWO INNER NORTH WALLS OF FORTIFICATION (A-B = FIG. 6) 1:200

A, ground-level of space between outer and middle north wall; B, second north wall; C, ground-level of corridor (2nd period); D, inmost north wall; F, north wall of church; E, ground-level of nave; G, south wall of church; H, ground-level of passage behind church; N-P, modern ground-level, below, white debris after destruction in 6th century; e, debris and ash from period I; f, debris of 4th century settlement; g, neolithic culture-level.

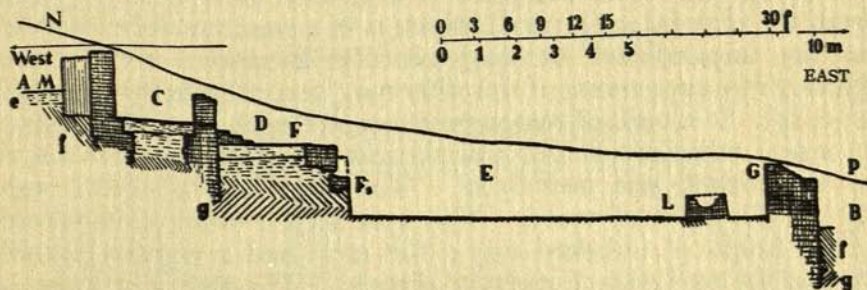


FIG. 4. CROSS-SECTION THROUGH CHURCH, EAST BY WEST (C-D = FIG. 6), 1:200

A, level of tower; B, level of terrace east of apse; C, level of entrance-hall; D, level of gallery; E, level of nave; F, wall of gallery (F I, period I); G, window; L, altar; M, east wall of tower; N-P modern ground-level, below, white debris after destruction in 6th century; e, debris and ash from period I; f, debris of 4th century settlement; g, neolithic culture-level.

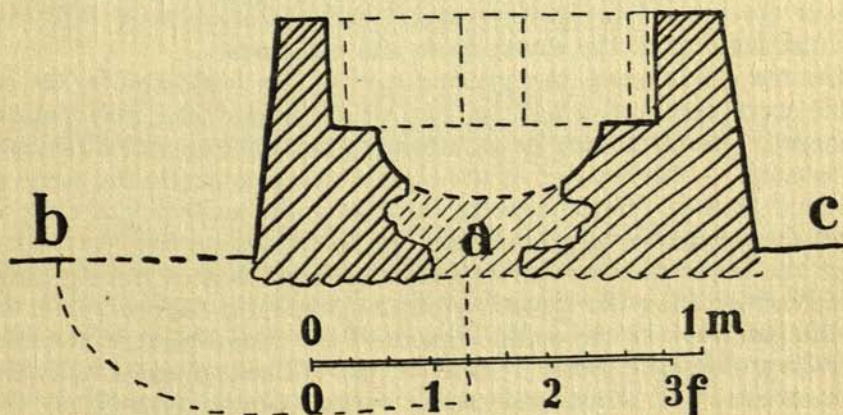


FIG. 5. VERTICAL SECTION THROUGH ALTAR, 1:20
a, break in wall (? position of reliquary); b-c, ground-level of nave

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subsoil thrown any light on it. There would have been many possible ways of giving the church a much more imposing position. There is not even any question of the continuance of an earlier tradition, for below the church and in its neighbourhood were found the buildings and hearths of the fourth-century industrial settlement. It seems therefore part of a deliberate plan that the church was sunk into the ground as it were like an ancient Mithraeum (see FIG. 3), with the resulting disadvantage that it was only accessible from one side, from a narrow street, and that the wall of the fortification took the light from the inner chamber. The church (FIG. 6) consists of a nave (E), gallery (D), and an outer hall (C) which provides a way up to the gallery (H), while the nave had an entrance on the south (K). The existence of a gallery, as well as the peculiar shape of the altar (L) in the nave, which is in a good state of preservation, is so far unparalleled in sixth-century Byzantine architecture in Bulgaria. The appearance of this altar may be seen from the illustrations (FIGS. 5, 15). It is built of masonry and coated with stucco. Apparently there was a reliquary at the point marked *a*, which was broken away when the church was destroyed. The floor was of clay, perhaps partly with a layer of wood. The apse had a dome constructed of great flat bricks of unbaked clay; the nave had a wooden barrelled-vault, and the roof was of straw or shingle. The walls must also have had a lining of wood, for they now show only a rough dressing, and there are no traces of stucco.

The walls of the church were built with a much better technique than that shown in the circumvallation. They date from the first period, while in the second the gallery was raised and a stairway built in the outer hall leading to the tower or to the ramparts.

On the other hand, the greater part of the buildings in the inner quarter were renewed after the fire which ended the first period of settlement. As far as can be ascertained, no fundamental difference of plan resulted. The lay-out of the streets was practically the same as in the second period. The chambers built on to the walls (*e.g.* C 5, F 5, etc.) suggest the casemates usual in Byzantine fortifications, but the construction of the inner quarter differs basically from that of purely military posts. Narrow, alley-like streets, which naturally did not need to be wider than the gateways in the walls, separated the inner quarter into blocks of buildings containing one or more rooms. These open lengthwise on to the streets, and sometimes make formal *insulae* (C D 3), in which narrow intermediate spaces, acting as gutters, separate the individual houses. To make the most of the available space, the buildings are

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pushed right up against the outermost edge of the precipice (A, FIG. 10), and certainly wooden railings were needed to prevent men and cattle from falling over. The uneven nature of the ground, and the considerable differences in height both within the settlement as a whole and within single blocks, are shown by the contours of the plan. These variations were so considerable that many of the buildings (e.g. D 2) were certainly two-storeyed, and steps were found cut in the streets (E 3). The streets are not paved, and their subsoil is

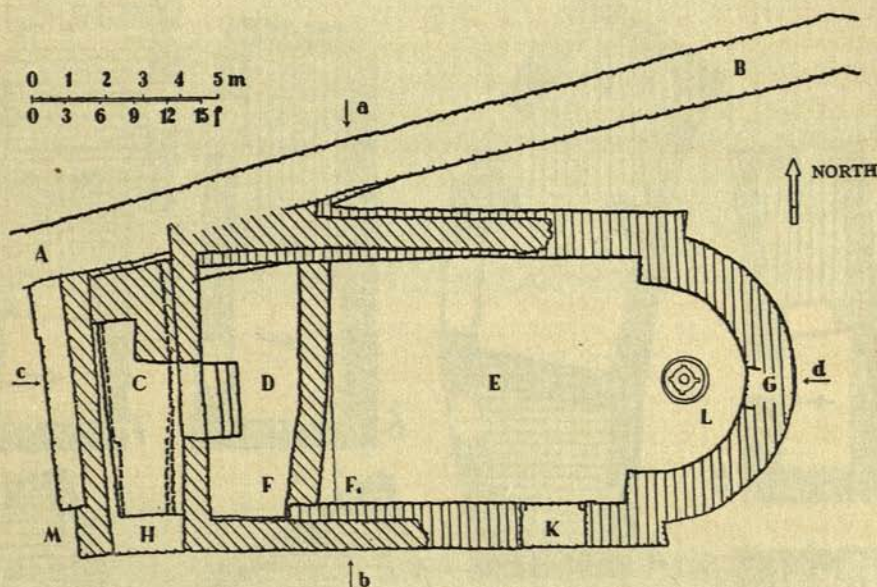


FIG. 6. GROUND-PLAN OF CHURCH, 1:200

A-B, inmost north wall of fortifications; c, outer-hall; D, gallery; E, nave; F, wall of gallery (F 1, first period); G, window; H, entrance to entrance-hall; K, entrance to nave; L, altar; M, east wall of tower (a-b=fig. 3; c-d=fig. 4)

either hard, weatherbeaten clay (the older cultural strata), or rock. If the space was too narrow for a street, they did their best by rounding off the corners that stood in the way (D 4, FIG. 7). Nothing was left standing of the upper parts of the buildings. This was due first of all to the fact that no mortar was used to cement the walls of the houses; instead they were constructed of pieces of limestone, easily liable to crumble, with earth as a binding material, so that they were predisposed to collapse. Secondly these walls were not originally very high, for they were only

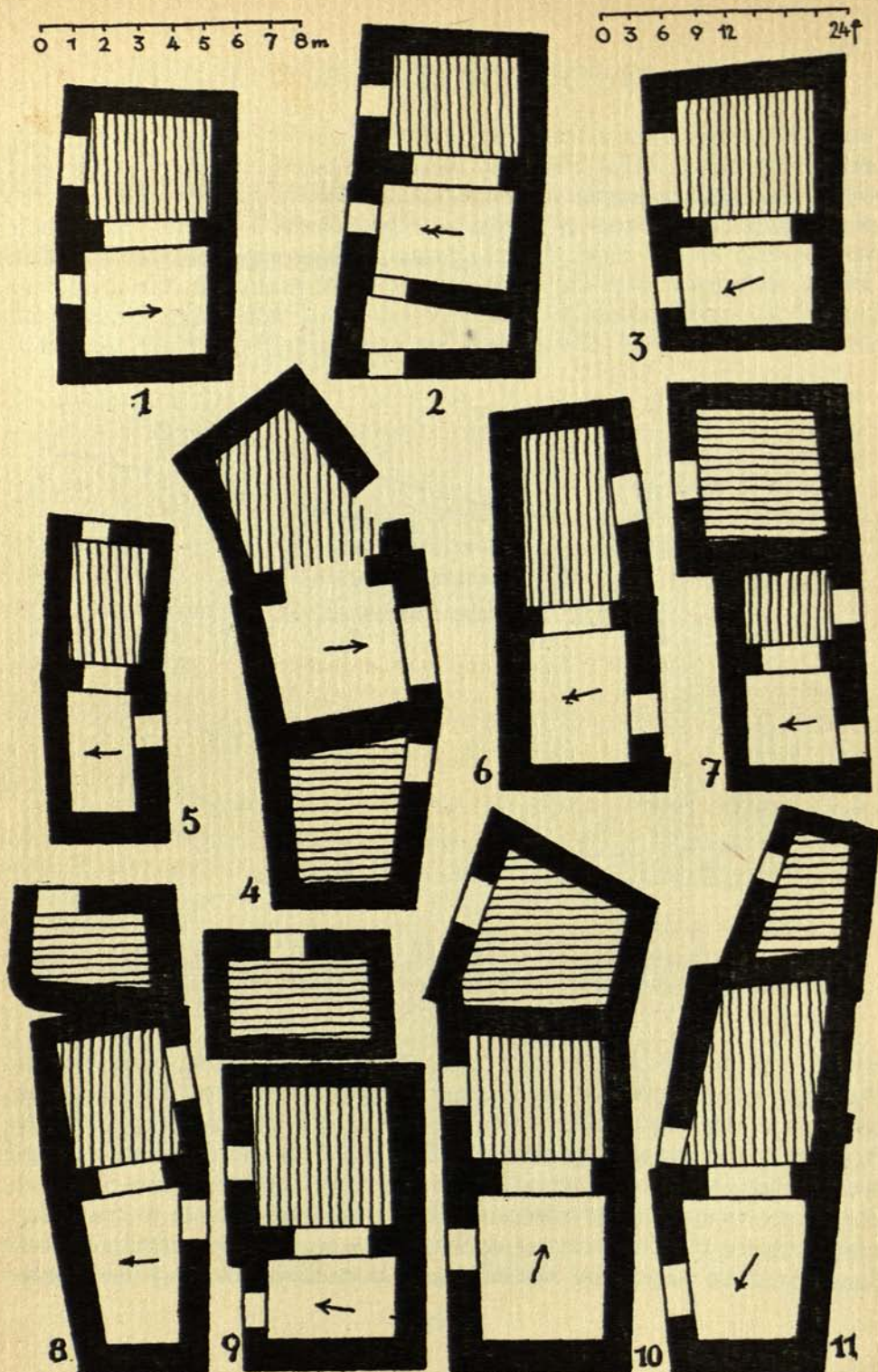


FIG. 7. GROUND-PLAN OF STONE SOCLE OF DWELLING-HOUSES, 1:200
 White, living-room with upper structure of wood and clay; perpendicular lines, stable (?);
 horizontal lines, store-room. The arrow marks North.

PLATE I

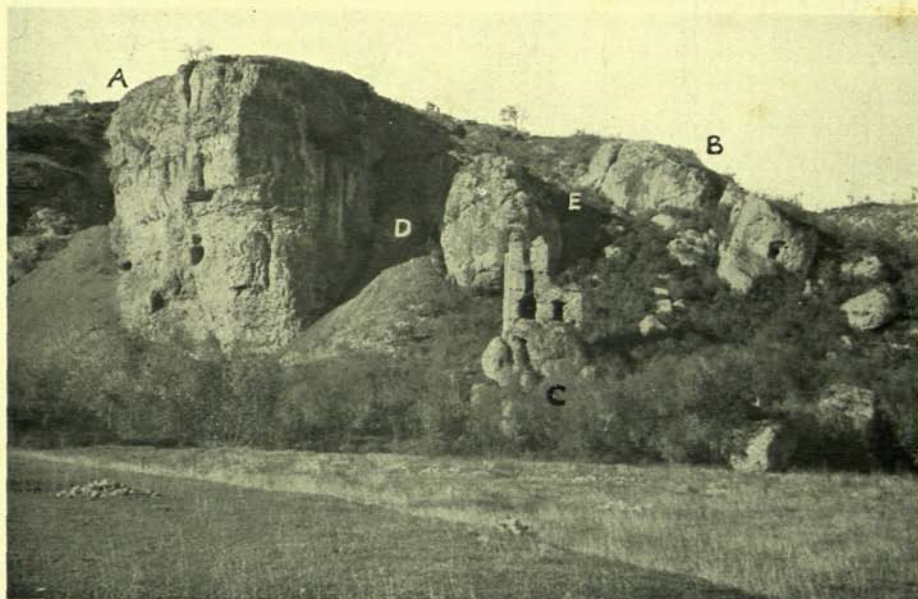


FIG. 8. VIEW OF GOLEMANOVO KALE LOOKING NORTH FROM VIT VALLEY
A, end of west wall. B, end of east wall. C, ruins of 14th cent. monastery. D, E, south wall



FIG. 9. VIEW OF GOLEMANOVO KALE FROM THE PLATEAU, LOOKING WEST
A, great tower. B, upper east gate. C, lower east gate. D, end of east wall. E, south wall (eastern portion)

PLATE II

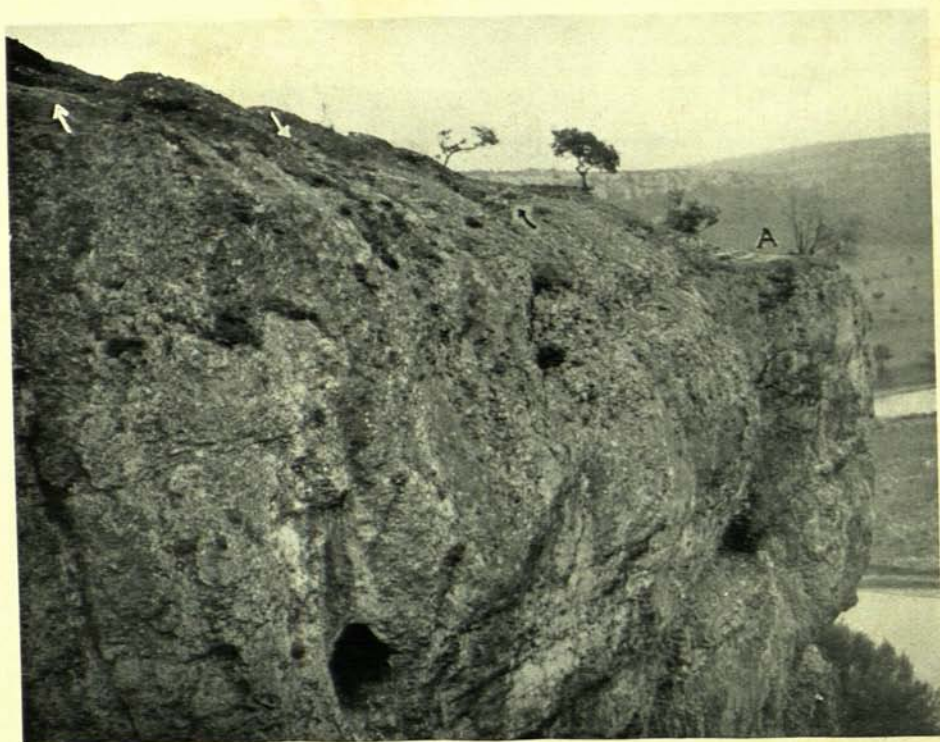


FIG. 10. PRECIPICE ON WEST SIDE WITH REMAINS OF FORTRESS-WALL (ARROWS) ON ITS EDGE.
A, last house on edge of cliff



FIG. 11. FOUNDATIONS OF WESTERN PORTION OF EAST WALL.
B, Sadowsko Kale on the south bank of the river Vit

PLATE III

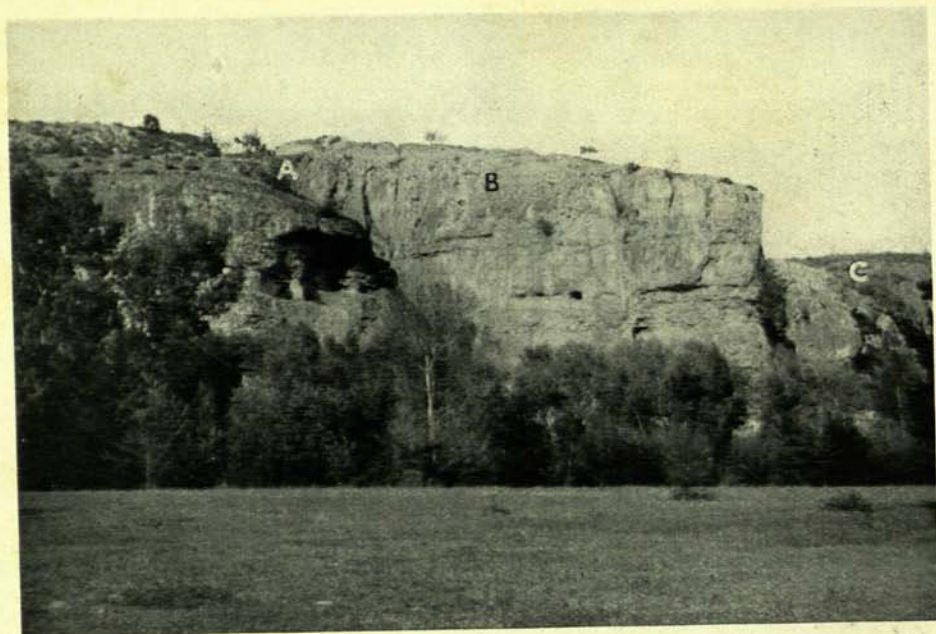


FIG. 12. GOLEMANOVO KALE FROM THE SOUTHEAST, FROM THE VIT VALLEY
A, great tower. B, end of the west wall. C, end of the east wall



FIG. 13. VIEW OF WEST PART OF CHURCH
C, entrance hall. D, gallery of nave. E, surface of the nave. F, gallery-wall. F1 = period 1

PLATE IV



FIG. 14. EAST END OF THE CHURCH SEEN FROM TOWER
c, entrance hall. d, gallery of nave. e, nave. f, wall of upper part of nave. g, window. k, door in nave.
l, altar. a, b, recesses for wooden arch



FIG. 15. ALTAR OF CHURCH (cf. FIG. 5)

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socles for an upper portion of organic material, which produced that thick upper layer of ash or burned clay which was met with everywhere in the inner quarter. On an average the thickness of the socle is 60-70 cm., and the height varied from 0.5 to 2 metres, according to the ground. The composition of this upper part was various. In one part of the buildings it consisted of a mixture of chaff and clay, and wood in the form of beams together with a wattle of thin lathes. The rooms thus walled always yielded many finds, especially pottery and domestic utensils, so that they were clearly recognizable as living-rooms. It was not possible to ascertain the position of the hearths. The living-rooms must have originally been floored with wood. The inner quarter nowhere had any special paving; the subsoil was of clay from the culture-strata, or of rock. From the character of the utensils it is incontestable that a peasant people dwelt there. These rooms have a wide aperture leading longitudinally to a second chamber, where no finds were made. Both are accessible from the street by more or less broad doorways cut out of the socle. The second room had an upper portion entirely of wood, no clay being used. The wide opening in the party-wall proves communication between the two chambers, which in my view were a living-room and a stable for cattle respectively, forming together a single house-unit. Such units are so frequent that they may be regarded as characteristic of this settlement (FIG. 7, 1-3, 4). In some instances the living-room is subdivided by a further party-wall (FIG. 7, 12). These houses are built either separately (E 4), or in longitudinal rows with the narrow sides adjoining (B C 4). Besides these two-roomed houses there are single-roomed dwellings with an upper portion of wood and clay. Possibly these were inhabited by the artisans attached to every settlement, for, as the discovery of a casting-mould shows, metal-workers were there. But there were also many one-roomed buildings constructed in the upper part entirely of wood; these yielded no finds, and their entrances were often so high that they can only have been accessible from the street by means of steps or ladders. These buildings, in my opinion, were store-houses for corn, etc., such as must certainly be presupposed as an important part of a fortified peasant-settlement. Sometimes such a store-room is added longitudinally to one of the two-roomed house-units previously mentioned (FIG. 7, 4, 7-11): in this case there is no direct entry in the lower storey from the stable to the store-room. It is generally accessible only from the street. But usually the store-rooms stand by themselves, sometimes in rows beside one another, separated by narrow lanes

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(D 2-3). We can assume 35-40 dwelling-houses and 40-50 store-rooms in the inner quarter. The roofs of the inner buildings, and of the towers also, were of wood, shingle, rushes, or straw. There were nowhere any finds of fallen tiles in the untouched layer of ash. The presence of supporting central struts suggests that a crested roof ran longitudinally along the buildings.

Since the double house-and-stable unit occurs also along the defence-wall (G 3-4), to which probably store-rooms were also added, the number of houses which could have served as a protection for a possible military garrison is still further lessened. Together with the purely unmilitary lay-out of the settlement, as above described, this points to the conclusion that we have here a fortified village inhabited by peasants. Among the dwelling-houses there is none which by reason of unusual size or by the wealth of finds in it or by its special position is marked out as that of the head of this peasant community.

The finds of coins show definitely that the inner buildings and the defence-works were constructed in the time of Justinian, and were destroyed about 600⁷. It is out of the question that fortified settlements of this type should have come into being in such numbers, under the firmly-established empire of Justinian, simply on the initiative of the local population; especially if we remember also that they lie in a region close behind the important Danube frontier, guarded as it was by great new military works, and also away from the great roads protected by the purely military posts of group A. In the vicinity of Sadowetz alone there are four such settlements. We may infer therefore that it was by the deliberate policy of the government that fortified villages were planted—most of them apparently on new sites—in this fertile region; their inhabitants were intended to provide for the agricultural needs of the army and of the government.⁸

The region was always exposed to the attacks of the tribes living beyond the Danube; and so, through the skill of the Byzantine engineers, whose experienced work is plainly to be recognized in the clever lay-out of the defence-works, the inhabitants of these settlements were enabled to defend themselves and their property as far as possible without military help.

⁷ More accurate dates can only be obtained from examination of the very rich finds of coins, which has not yet been possible.

⁸ Mr A. H. M. Jones refers to these and similar circumstances prevailing in Thrace in his fine book *The Cities of the Eastern Roman Provinces*, Oxford, 1937. [A review will be published shortly.—EDITOR].

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These settlers were very well off. To begin with, there is the remarkable fact that their living-rooms had glazed windows ; and their wealth may also be inferred from the abundance of silver ornaments and, in particular, from the number of gold coins found in the excavations both at Golemanovo Kale and at Sadowsko Kale. So they were well paid for their supplies, and were therefore to a certain extent independent of the government. This is the only conclusion that can be drawn from the finds ; and if we fit it into the picture suggested by historical tradition, we must infer that the inhabitants of this and of the other fortified village settlements held the social status of *foederati*.

It is only possible to give a general answer to the question of the racial affinities of these peoples. After the departure in the fifth century of the Eastern and Western Goths who had settled in these parts the *Goti minores* remained behind, and mingled with new German immigrants from the other side of the Danube frontier. It is impossible to know how far the native elements still maintained themselves here in the troubled times between the third and fifth centuries, or the extent to which the non-German element had joined them from the East beyond the Danube. The German element is in any case markedly reflected in the finds of purely German manufacture (alongside of the predominating Byzantine ware).

More than 60 of the triangular arrow-heads⁹ characteristic of the Avars were found, mostly along the line of the fortifications ; this fact, together with the abandonment of the settlement (which from the cessation of the series of coins can be dated to round about 600), helps to establish the circumstances under which the entire site met its end in a fire and was never rebuilt. It was the invasions of the Avars, historically well attested, that after the fall of Belgrade (*Singidunum*) brought to an end in this spot the last great effort of the old Byzantine empire, by destroying this carefully-planned system of settlements. This is shown also by traces of burning in the other fortified sites. So came the end of ancient history for the region between the Danube and the Balkans.

⁹ See also Welkow, l.c., and plate 19, 1 ; 1-2, 6-7.

Nennius and the Twenty-Eight Cities of Britain

by KENNETH JACKSON

IN a recent article in the *English Historical Review* (vol. LII, pp. 193 ff.) Mr C. E. Stevens has examined the question of the 'Twenty-Eight Cities of Britain' which are spoken of by Gildas ('De Excidio', chap. III); and, on the basis that Gildas knew of some Romano-British *Notitia Britanniarum*, has attempted with considerable success to discover what cities these must have been. Bede (*Hist. Eccl.* I, 1) and Nennius (*Hist. Britt.*, ed. Mommsen, pp. 147 ff.) both repeat Gildas' remark in much the same words; and in Section VI of the *Historia Brittonum* their names are given, with the heading *Haec sunt nomina omnium civitatum quae sunt in tota Brittania, quarum numerus est xxviii*. They are in Old Welsh of about the eighth or ninth centuries, and can therefore be contemporary with the compilation of the *Historia Brittonum*. Each is described as *Cair*, the Welsh equivalent of *civitas* in the late Latin sense. Another version of the *Historia Brittonum* has made the number into thirty-three, no doubt by misreading xxviii as xxxiii; the deficiency is filled up with five extra names also in Old Welsh. Some of the forms are however rather younger than in the first version (e.g. Cair Lion for Cair Legion), and the Expanded List may be a century or so later than the original.

Haverfield showed in the Appendix to his *Roman Occupation of Britain* (ed. of 1924, pp. 289 ff.) how the List was used by Henry of Huntingdon, who gave identifications of the cities, some correct but others obviously fanciful. His contemporary Geoffrey of Monmouth likewise knew the Nennian List; and corrupting them in his usual manner he gave his own equivalents for some of them, as fanciful as Henry's. English and Welsh antiquaries handed on for centuries versions of this list corrupted in various ways; those that give identifications are based on the worthless authority of Henry and Geoffrey. The Welsh version appears in many medieval Welsh manuscripts, generally in an antiquarian article entitled *Enweu Ynys*

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Prydein, 'The Names of the Island of Britain'; that in the Red Book of Hergest (early 15th century) was edited by Professor Williams in the *Bulletin of the Board of Celtic Studies*, vol. v, pp. 19 ff. Some of the imaginary equivalents have found their way permanently into pseudo-learned Welsh nomenclature. An example is the modern dictionary rendering of *Caer Lwytgoed* as Lincoln; see also *Cair Grauth* below. In fact none of them from Henry and Geoffrey down have any independent value, and in trying to settle what cities Nennius had in mind we can rely only on the internal evidence of his own list. Since it is possible to add a certain amount to what Haverfield had to say on the matter, it is worth while reopening the question of what the original Nennian twenty-eight cities really were. In the following pages one or two points are to be noted:—

1. The native language of Roman Britain was the branch of Celtic called British (abbreviated *Br.*).
2. Welsh is the direct descendant of British, which in the centuries preceding and following the withdrawal of Roman rule was evolving towards Welsh, just as on the continent Latin was becoming broken down and evolved into the Romance languages some time later.
3. The earliest form of Welsh, called Old Welsh (abbr. *O.W.*) is dated from the time of this break-up down to the 11th century. Medieval Welsh (abbr. *M.W.*) from the 11th to the 14th centuries, and Modern Welsh (abbr. *Mod. W.*) from the 15th century on.
4. The spelling of *O.W.* was more archaic than the pronunciation, so that for example
5. though the initial consonants of the town names in the list were already mutated in speech following the feminine noun *Cair* (*M.* and *Mod. W.* *Caer*), the mutation was not shown in the spelling. Thus *O.W.* *Cair Caratauc*, *M.W.* *Caer Garadawc*. These mutations, which affected all mutable consonants after a feminine noun, will be found to occur in the List as follows:—

<i>c-</i> ,	still spelt <i>c-</i>	in <i>O.W.</i> ,	becomes <i>g-</i>	in <i>M.W.</i>
<i>g-</i>	" "	<i>g-</i>	" "	is lost " "
<i>p-</i> ,	" "	<i>p-</i>	" "	becomes <i>b-</i> " "
<i>b-, m-</i>	" "	<i>b-, m-</i>	" "	" <i>f-</i> (i.e. <i>v-</i>) in <i>M.W.</i>
<i>t-</i>	" "	<i>t-</i>	" "	" <i>d-</i> " "

The names in the List can be divided into four classes; those that can be identified with certainty, those whose identification is probable or

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possible, those that are unknown but are intelligible Welsh words, and those that are now neither intelligible nor identifiable. Names marked with an asterisk are hypothetical reconstructed forms, inferred but not actually found to occur as such. Unless otherwise noted the O.W. and other Welsh forms given are the direct descendants of the Br. form.

CERTAINLY IDENTIFIABLE

CAIR LIGUALID, Carlisle (see *Y Cymmrodor*, xxviii, 59). Br. Luguvalion,* 'The Rampart of the God Lugus'; Antonine Itinerary: Luguvallo, Luguvalio. O.W. Cair Ligualid. M. and Mod. W. Caer Lliwelydd. Lugalbala in Bede and Nennius (ed. Mommsen p. 186, var. lect.) is a corrupt form from written, not spoken, sources. Luel in the *Life of St. Cuthbert* is the spoken form without its Welsh termination.

CAIR EBRAUC, York. Br. Eburácon,* either 'Cow-parsley Town' or 'Yew-tree Town'. In primitive Celtic *eburos** seems to have meant 'yew-tree', as in the Irish *iubhar*, but the Welsh derivative *efwr* is 'cow-parsley'. Ptolemy: Eborakon. Cassiodorus: Eboracum. Ant. It.: Eboracum. O.W. Cair Ebrauc (*Annales Cambriae* s.a. 867, Urbs Ebrauc); M.W. Caer Efracw. Mod. W. Caer Efrog.

CAIR LUNDEIN (emend so; Nennius Lundem, var. Londen, Lunden, etc.; *m* for *in* is a common scribal error), London. Lat. Londinium, Lundinium (Tacitus, Ptolemy, Ant. It., Ammianus, etc.). The meaning and etymology of the name, and even the form and quantities, are uncertain. Ekwall, who follows Arbois de Jubainville, may be right (*Concise Oxford Dictionary of English Place-Names*, s.v.); but see Max Förster, *Altenglisches Lesebuch*, 4th edition, Heidelberg, 1931, p. 67. O.W. Lundein, M.W. Llundein, Mod. W. Llundain, is the regular name for London; but it cannot be a derivative of Londinium, which would give O.W. Lennin*; nor of Förster's Lōndinium or Lōndonion,* which would give respectively O.W. Lunnin* and Lunnein.* It is no doubt a case of early Welsh borrowing, Lundein from A.S. Lunden.

CAIR CEINT, Canterbury. Br. gen. sg. Cantī,* '(city) of Kent'; nom. sg. Cantion 'The White Land', from *cantos** 'white', or 'The Round Land' from *cantos** 'orb, disc, circle' (Ekwall, *op. cit.*, is inclined to accept Silvan Evans' *caint* 'plain, open country', but this is a ghost-word). Caesar: Cantium; Diodorus, Strabo, Ptolemy: Kantion. O.W. Cair Ceint (Nennius, ed. Mommsen p. 179 var. lect., *regionem* . . . *Ceint*). M.W. Caer Geint. Mod. W. Caer Gaint.

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CAIR LEGION, Chester. Br.-Lat. *Castra Legionum*. O.W. Cair Legion (Bede, *Hist. Eccl.* II 2, *ad civitatem Legionum, quae . . . a Brettonibus . . . Carlegion appellatur*; *Annales Cambriae* s.a. 602, *sinodus urbis Legion*; *ibid.* s.a. 614, *gueith* (battle) *Cair Legion*). M. and Mod. W. *Caer Lleon*.

CAIR GURICON, Wroxeter. Br. *Vricon*-* (meaning?). Ptolemy: *Ouirokonion*. Ant. It.: *Uriconio*, *Virocono*. See *Y Cymmrodor*, XXI, 10 ff. and 59 ff., where it is shown that the early Celtic form would be *wrikon*-* (*i.e.* *Vricon*-*). O.W. *Guricon*, *Cair Guricon* (*ureconn* for *guricon* in the 9th century poetry, see I. Williams, *Canu Llywarch Hen* p. 230); M.W. *Gwrygon*, *Caer Wrygon*.*

CAIR SEGEINT, Carnarvon. Br. *Segontion*.* Ant. It.: *Segontio*, *Ravennas Seguntio*. O.W. *Cair Segeint* (Nennius, ed. Mommsen p. 166); M.W. *Caer Seint*. Mod. W. *Saint*, the river at Carnarvon. *Not* *Caer Seion*, which is a different place, see *Archaeologia Cambrensis*, LXXXIII, 357.

CAIR LEGION GUAR UISC (emend so; Nennius *Cair Legeion guar Usic*, var. *Ligion*, *Legion*, etc.), *Caerleon upon Usk*. Br.-Lat. *Castra Legionum* vor *Ēscā*-* (cf. Chester above). Br. *Ēscā*,* the name of the river. Ant. It.: *Isca*, the town. M.W. *Caer Lleon ar Wysc*. The Welsh form, here and in Asser's *Uisc*, the river *Exe*, shows that the *E* must have been long in Br.; which raises problems of its relation to Rom.-Brit. *Isca*; Engl. *Exe*; Irish, *esc*; not solved by Ekwall *op. cit.* s.v. *Exe*.

CAIR GUENT, *Caerwent*. Br. *Ventā*,* meaning uncertain. Ant. It.: *Venta Silurum*. O.W. *Cair Guent*. M. and Mod. W. *Caer Went*. That this one is meant and not one of the other two *Venta*'s of Roman Britain, seems certain; to a Welshman of any century there could be only one place of this name.

CAIR LUITCOYT, Lichfield. Br. *Lētocaiton*,* 'Grey Wood'. Ant. It.: (L)etoceto, *Ravennas Le(c)tocetum*. O.W. *Cair Luitcoyt*. M.W. *Caer Lwythgoed* (in early poetry, see I. Williams, *Canu Llywarch Hen* p. 52).

PROBABLY OR POSSIBLY IDENTIFIABLE

CAIR GUORTHIGIRN, 'The City of Vortigern'. M. and Mod. W. *Caer Wrtheyrn*.* Nennius (ed. Mommsen, p. 191), *arcem Guorthigirni quae est in regione Demetorum iuxta flumen Teibi*, 'the citadel of Vortigern which is in the land of Dyfed near the river Teifi'. This is the modern *Craig Gwrtheyrn* above the *Teifi* near *Llandyssul*, in what was in early

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times part of Dyfed (cf. the Ordnance Survey Map of Britain in the Dark Ages, South Sheet). But note *ibid.*, p. 186, *ipse* (Vortigern) . . . *ad sinistram plagam pervenit et usque ad regionem quae vocatur Guunnessi adfuit, et urbem ibi quae vocatur suo nomine Cair Guorthigirn aedificavit* (var. *ad septentrionalem plagam insulae Britanniae . . . ad regionem cui est nomen Guunis*). Guunnessi and Guunis are unknown and probably corrupt, but the Latin points to the British kingdoms of southern Scotland and the North of England; 'Y Gogledd' in Welsh, always rendered *sinistralis* (*pars, plaga*, etc.) in early Welsh Latin (*gogledd*=1 'left hand', 2 'north').

CAIR GUINNTGUIC. Br. *-ent-* became *-int-* unless prevented by final *-ā*, as in *Venta*. If however we assume a masc. or neut. variant *Ventos** or *Venton** or a compound *Vento-*,* this would give O.W. *Guint*, M.W. *Gwynt*; which is in fact the name of Winchester in a 9th or 10th century poem in the Book of Taliesin (*Caer Wynt*, B.T. 15, 23). Postulating further a Br. *Ventovicion** (cf. *Longovicium*, *Lanchester*), with the element *vīc-* which appears in Latin *vīcus* 'village', A.S. *wīc* 'village, town' (Engl. *-wich* in place-names), Ir. *fīch* 'farm, town', Breton *gwiek* 'burgh', this would give exactly O.W. *Guin(n)t-guic*, Mod. W. *Gwyntwig*,* with the same meaning as *Caer Wynt*. May one suggest that an alternative Rom.-Br. name for *Venta Belgarum* was *Ventovīcium**, and look out for a possible A.S. *Wintwic**?

CAIR COLUN. *Colun* comes regularly from *Colōnia*. Of the five *Coloniae* of Roman Britain, *York* is already in the List and *Gloucester* in the Expanded List (in any case *Gloucester* could never be anything but *Cair Gloiu*, M.W. *Caer Loyw*); *St. Alban's* is improbable, as *Colonia* does not appear among the later names for the place. This leaves either *Colchester* (*Colne-ceaster*=*Cair Colun* exactly) or *Lincoln* (*Bede Lindocolina*, A.S. *Lind-cylene*). On historical grounds the second seems rather more likely.

CAIR CARATAUC. The personal name, Br. *Caratācos*,* Lat. *Caratacus*, O.W. *Caratauc*, M.W. *Caradawc*, Mod. W. *Caradog*. The various *Caradogs* of early Welsh story are entirely legendary. A *Caer Garadog* is mentioned in a poem in the Book of Taliesin apparently in connexion with the northern British kingdoms (p. 65, 3-4, *o Gaer Glut hyt Gaer Garadawc*, 'from *Dumbarton* to *Caer Garadog*'); and in a very old poem on *Cadwallon* which Professor Williams seems to think may be contemporary with him, it says *yspydawd Cadwallawn Gaer Garadawc vre wrth y gyfwyre gynne Efrawc*, 'the company of *Cadwallon* in the district of *Caer Garadog* at the stir over the burning

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of York'; see *Bulletin of the Board of Celtic Studies*, VII, 25. But as with Cair Guorthigirn there are sites of this name, hill-forts and the like, in the south as well (there are more than one in Shropshire, see J. E. Lloyd, *History of Wales*, I, 53). Perhaps the most notable is that on top of the Breiddin above the Severn in Montgomeryshire.

CAIR GRAUTH. Henry of Huntingdon's identification with Cambridge presupposes a scribal error, to be emended to Grant(h), which is in itself likely enough. This is generally rejected as a bad guess, but surely with insufficient reason. The A.S. name for Cambridge was Grantacaestir (Bede), derived from the name of the river Granta which is believed to be Celtic (Ekwall's etymology, *op. cit.* s.v. Granta, is not very convincing). If not the original Celtic name for the town, Cair Grant might well be a Welsh adaptation of A.S. Grantacaestir, with the same meaning. What would the famous 'devils' talking Welsh in the Fens in Felix's Life of St. Guthlac (8th century) have called Cambridge? But historically it seems not very likely that Nennius would choose the place. In any case the Mod. W. Caer Grawnt is a pseudo-learned corruption derived from the List; Caer Grawnt would come from an O.W. Cair Craunt,* and O.W. Cair Grant would give Mod. W. Caer Rant.* In fact the real Welsh for Cambridge is the same word; cf. T. H. Parry-Williams, *Canu Rhydd Cynnar*, poem no. 21, *y rhodie i Gambridge a Rhydychen*, 'he should journey to Cambridge and Oxford', in a 17th century folk-poem.

CAIR DAUN, Doncaster? Br. Dānon,* Ant. It.: Danum, would become regularly O.W. Daun, M. and Mod. W. Dawn. But the name is otherwise unknown in Welsh for this place, except in versions of the List; and, as with Cambridge, it seems a rather unlikely place to choose at the period.

CAIR BRITHON, 'The City of the Britons', which can only mean Dumbarton. The regular Welsh name for Dumbarton was O.W. Alt Clut, Cair Clut, M. and Mod. W. Allt Clud, Caer Glud, 'The Rock on the Clyde' and 'The City on the Clyde'. But in Irish and Scotch Gaelic it is Dún (m)Bretan, 'The Fort of the Britons', whence Dumbarton. Cair Brithon (Br. gen. pl. Britton-*), M. and Mod. W. Caer Frython,* must be either a translation of this or an alternative native name not recorded elsewhere.

CAIR PENZA VEL COYT. 'The City of Pensa or Forest' makes no sense; to be read no doubt as Cair Pen(n) Savel-Coyt, 'The City of the End (or Hill) of savel Forest'. *Savel* is unknown, and the *v* must stand here for O.W. *u*, = M.W. *w* (there is no *v* in O.W., and

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Latin *v* and *u* are of course interchangeable ; but at this early period one would have expected *gu* in O.W.—*Saguel*). O.W. *sauel* would be M.W. *sawell* 'chimney' ; therefore 'The City of the End (or Hill) of Chimney Forest' ? Has been identified with Penselwood (*i.e.* 'Penn in Selwood', see Ekwall *op. cit.* s.v.), where there was a battle between Britons and Saxons in A.D. 658, Anglo-Saxon Chronicle. 'If . . . not . . . it is a very odd coincidence', Haverfield, *op. cit.* p. 290. Exactly ; but though the *Pen* in this is the same as the Welsh *Penn*, the forest-name Selwood (A.S. *Sealwuda*, *Selewuda*) means 'Sallow Wood', A.S. *salh* (Ekwall). Perhaps *Sauel Coyt* is a Welsh etymologizing adaptation of *Sealwuda* ; possibly vice versa, but this is less likely since 'Sallow Wood' makes better sense than 'Chimney Wood'.

INTELLIGIBLE BUT NOT IDENTIFIED

CAIR MINCIP. Br.-Lat. Municipium would give Mincip in O.W., but there is nothing to show which of the Roman municipia is intended.

CAIR CUSTEINT (emend so ; Nennius *Custoeint*, var. *Custeint*, *Gustaint*, etc.). The Latin *Constantius* became Br.-Lat. *Cōstantius*, and this gave O.W. *Custeint* (*not* from *Constantinus*, which gave *Custennin*). Which *Constantius*, and where his city was, is unknown. Welsh tradition connects a *Constantinus*, though which one is not very clear, with Carnarvon (Nennius, ed. Mommsen p. 166, *Constantinus Constantini Magni filius fuit, et ibi moritur, et sepulcrum illius monstratur iuxta urbem quae vocatur Cair Segeint, ut litterae quae sunt in lapide tumuli ostendunt*), but as *Cair Segeint* occurs already in the List some other place is to be looked for.¹

CAIR MAUNGUID. A Br. *Mānovid*-* would become O.W. *Maunguid*, Mod. W. *Mawnwydd**, 'Bog Forest'.

CAIR PERIS. Seems to contain the same name as in *Dol Peris*, *Llanberis*, in North Wales. The single -s- of *Parisii* shows that it is not *Petuaria* ; *Parīssī* would give *Peris* exactly.

UNINTELLIGIBLE AND UNIDENTIFIED

CAIR MEGUAID. The spelling could stand also for O.W. *Miguaid* ;* Mod. W. *Mewaedd**, or *Mywaedd*.*

¹ In the 12th century 'Life of Gruffydd ab Cynan' Carnarvon is called 'City of Constantine the Emperor, son of Constans the Great'. The tradition arises no doubt out of an early Latin inscription to some *Constantinus* otherwise unknown, but later equated with *Constantine the Great* or his son. Cf. I. Williams, *Breuddwyd Maxen* (Bangor, 1920) p. xix.

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CAIR GUIRAGON. Can stand also for Guirangon* ; cf. *Gwenhwy's gwallt-hiryon am Gaer Wyrangon*, 'The long-haired Gwent-men around Caer Wyrangon', in a poem in the Book of Taliesin, 41.25. Identified by Henry of Huntingdon with Worcester. There are no grounds for this 'except', as Haverfield says *op. cit.* p. 291, 'that both contain the same consonants in a different order'. Worcester is from A.S. Wigorna-ceaster (see Ekwall, *op. cit.* s.v.), 'The City of the Wigora People'. Wigora from a Br. Vigorā,* a river name (cf. several Gaulish rivers Vigora, see Holder *Altceltischer Sprachschatz* s.v.); and this would give Guigor* in O.W., not Guira(n)gon. The B.T. passage suggests that Cair Guiragon was in Gwent; unless indeed it was written when Henry's ideas had already become current in Wales, under the impression that Caer Wyrangon really was Worcester. Cf. however Nennius, ed. Mommsen p. 179, *Guorthigirinus dedit laete illis* (Hengist and Horsa) *regnum Gurangona*; var. *et dedit illis Guoyrancgono regnante in Cantia*. Did Nennius mean somewhere in Kent by Cair Guiragon?

CAIR LERION. Looks like a plural in *-ion*; the spelling can stand for Leirion* from Br. Larion-,* Lerion-,* or Lorion-,* or for Lirion (Mod. W. Llyrion*) from Br. Lirion-.*

CAIR DRAITOU, var. Draithou, etc. Obscure.²

CAIR URNARC, var. Urnach, etc. Urnarc is unlikely; a M.W. personal name Wrnach occurs in the Mabinogion of a fairy-tale giant who has a *caer*.

CAIR CELEMION, var. Celeimon, Celemon, etc. A pl. in *-ion*? Spelling must represent Celeimion; or, with scribal error, Celeinion. Cf. M.W. *celein* 'a corpse'?

² Since writing the above, Mr O. G. S. Crawford has drawn my attention to Cott. Vesp. MS A. XIV, f. 93b (Vita S. Carantoci), *in istis temporibus Cato et Arthur regnabant in ista patria, habitantes in Dindraithov*. W. J. Rees' notoriously corrupt edition, *Lives of the Cambro-British Saints*, p. 99, reads Dindrathou; Dr C. E. Wright, of the British Museum, writes 'After careful consideration I am certain the reading . . . is Dindraithov'. Din Draithou, 'Citadel of Draithou' (Mod. W. Din Draethau*?) is evidently the same as Cair Draithou; the context shows that it was in Cornwall. *Dind Tradui* of Cormac's Glossary (s.v. *Mugh Eme*) is the name of some early Irish settlement in Britain; possibly the same as Din Draithou, but on phonetic grounds the identification is doubtful. To read Din Traithou,* 'Citadel of the Beaches', would give sense and help this identification; but *din* would not cause mutation, and mutation after Cair is not found in spelling in the list.

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THE EXPANDED LIST

Of the five extra names in the enlarged list of thirty-three cities, two are certainly to be identified, one probably, one very doubtfully, and one is unintelligible and unknown.

CAIR MERDIN, Carmarthen. Br. Moridūnon,* 'Sea Fort'. Ptolemy Maridunon, Ant. It. Muriduno. O.W. Cair Merdin, M.W. Caer Fyrdin, Mod. W. Caer Fyrddin. Now understood as 'The City of Merlin' (Myrddin).

CAIR GLOIU. (The reading of Brit. Mus. Harl. 3859 is Gloiu, not Gloui as so often transcribed), Gloucester. Br. Gloivon,* 'Bright'. Ant. It. : Glēvo. O.W. Cair Gloiu. M. and Mod. W. Caer Loyw.

CAIR CERİ, Cirencester? (Asser, chap. 57, *Cirrenceastre adiit, quae Britannie Cair Ceri nominatur*; Book of Taliesin 15.3, Kaer Geri, in a 9th or 10th century poem). Ptolemy Korinion, which if the first *i* is long would give regularly Cerin in Welsh, not Ceri. An original scribal error with Ceri (*i.e.* Cerin) misread as Ceri, seems possible. See however Ekwall, *op. cit.* s.v. Cirencester.

CAIR GURCOC. A Br. Virococ-* would give O.W. Gurcoc.

CAIR TEIM. A Br. *Tamī**, with the element *tam-* common in river names (Thames, Teme, Taf, etc., etc.), would become O.W. Teim. Cair Teim could possibly be Llandaff (O.W. Lan Tam) with an early stereotyped gen. sg. form Teim, nom. sg. Tam. For such stereotyped genitives, cf. Maelgwn (properly orig. gen. sg.) beside Meilyg (properly orig. nom. sg.), from Br. Maglocū,* gen. sg. Maglocunos.*

These names of Nennius' List bear on the stamp of genuineness. The kind of thing that happened when Welsh antiquaries set about inventing names is seen well enough in Geoffrey of Monmouth's writings. But the Nennian forms are in quite a different category; they are not fictitious, nor are they antiquarian Welshifyings of real Latin and English names, for they fit too well into the recognized rules of Celtic philology, and if we cannot understand a few of them it is due to our own ignorance or to scribal miscopying. Plainly these were more or less well-known place-names written down correctly from the spoken Welsh of about Nennius' own time; and some of them were derived directly, by the ordinary processes of linguistic change, from good British and British-Latin forms known to us independently from other sources. Where were they found, and on what principles were they compiled? Haverfield, who was always inclined to do Celtic sources less than justice, says of them (*op. cit.* p. 290) 'the list may have

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been composed . . . by a Celt who knew Wales well, who perhaps knew the other Celtic districts of Britain a little, and who shared the notorious ignorance of his fellows concerning the eastern English districts'. This very inadequate view was arrived at by picking out those names that belong to Wales and the border, ignoring the unmistakable evidence of Cair Ceint and others, and using unnecessary caution over Cair Lundein and Cair Colun. One may agree with Haverfield however where he says (p. 289) 'Plainly it belongs to a Celtic and not to a Roman world: it is neither a list handed down from Roman times nor a translation of such a list'. True, a fair number of its cities were more or less important places in Roman Britain, such as York, Chester, Caerleon, Carlisle; but these all continued to be so right through the Dark Ages, either in fact or in common Welsh tradition. For the rest, so far as they are identifiable they are mostly places of no significance whatever in Roman times, such as Craig Gwrtheyrn (if this identification is correct) and Dumbarton. Of the twenty or twenty-one Roman towns which, as Mr Stevens has shown, probably did belong to a genuine Romano-British register of twenty-eight cities known of by Gildas, only eight are found in the present List—Carlisle, York, London, Canterbury, Caerwent, Winchester (?), Lincoln or Colchester, Wroxeter; with three more from the Expanded List of thirty-one—Carmarthen,³ Gloucester, Cirencester (?).

It is evident that the Welsh List was made up on some quite different basis. In fact, the compiler knew from Gildas and Bede only so much—that there were traditionally twenty-eight important cities in Britain, not their names, and so he set to work to supply these names from his own sources. There seem to be two ways in which he could have done this. He could have chosen twenty-eight of the chief centres of his own time throughout Britain, both Saxon and British; or, knowing that the twenty-eight cities belonged to a Romano-British past, he could have picked them from the famous British traditions and legends of the old days, places not necessarily of any contemporary importance when the List was made. In support of the first, it is notable that the main divisions of Saxon England in the Dark Ages, as well as the British areas, are fairly well represented with existing centres of more or less prominence, as would be expected on this hypothesis. For Northumbria, Carlisle, York, and Doncaster (?); for Lindsey, Lincoln (?); for Mercia, Chester and Lichfield; for Middle Anglia,

³ But Mr Stevens is very doubtful whether Maridunum should be included.

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Cambridge (?); for Essex, Colchester (?) and London; for Kent, Canterbury; for Wessex, Winchester (?) and Penselwood (?). Dumbarton, Caernarvon, Caerleon, Caerwent, were well-known in the Welsh lands at the time. It is even possible in one or two cases that Anglo-Saxon forms of names were adopted; see Cair Grauth and Cair Pensa vel Coyt above; and in the case of Cair Lundein it seems very probable.

But certain arguments can be put forward in favour of the second method of compilation. As cities, Craig Gwrtheyrn and Caer Garadog, though real places, belong purely to legend (if the southern identifications are accepted), and so no doubt do most of the unidentified places on the list. Carlisle, York, Chester, Wroxeter, Lichfield, Canterbury, Dumbarton, and the Welsh towns can all be found in early Welsh tradition, either in the poetry or in Nennius, as places of ancient fame. It is odd in this case that the Caer Eidyn (Edinburgh), so famous in the early Welsh classic the *Gododdin*, should be left out; and one might have expected to find Cair Badon* and some of the other places believed at the time to have been connected with king Arthur. In some instances the obvious remains of Roman occupation may have helped in their inclusion; Wroxeter is an example; and in others, such inadequate information as Nennius had about Roman Britain from Latin sources. The compiler seems to have understood the significance of Gildas' *civitas* sufficiently well not to include places which come into prominence late as Christian monastic settlements only, not as civil or military centres; such as St. Asaph's, Bangor, Clynnog, Llanbadarn, St. David's, and many others.⁴

The truth is no doubt that Nennius worked on both methods. A certain number of places would be an obvious choice on all grounds, both for their past prominence in tradition and for their greater or lesser importance at the time; Carlisle, York, Chester, Caernarvon, Caerleon, Caerwent, Lichfield, Dumbarton. With others, Roman remains plain to see may have made it clear that these were once great cities,⁵ though no longer necessarily of much fame; this may be the case with Wroxeter, the doubtful Doncaster, and the exceedingly doubtful Cambridge, as well as for some of those for which no identification can now be proposed, *e.g.* Cair Mincip. Others would be included because they were supposed to be connected with famous British

⁴ This makes the equation Cair Teim—Llandaff even more uncertain, though in the later Expanded List the significance of *civitas* may have been forgotten.

⁵ Cf. Giraldus Cambrensis on Caerleon, *It. Kambr.* i, 5.

NENNIUS AND THE TWENTY-EIGHT CITIES OF BRITAIN

heroes, though no trace of a city was necessarily visible or ever had been ; Craig Gwrtheyrn and Caer Garadog perhaps come in here, and possibly Caer Gustaint, and the very doubtful Penselwood if any tradition of the battle of 658 was known in Wales at the time. Still others might be included primarily for their present political importance, though some of the foregoing reasons would apply to them as well ; this would cover London, Winchester, Canterbury, Lincoln (?).

The conclusions are then as follows. Of Nennius's List of twenty-eight cities, ten are identifiable with certainty (and two more from the Expanded List), eight can be pinned down with some extent of probability or possibility (and two more from the Expanded List), and ten cannot be identified at all (one more from the Expanded List). These cities are certainly not to be regarded as taken from any official Roman 'Notitia', though Mr Stevens has proved that the conception of the twenty-eight cities does very likely come from such a document. It appears that Nennius set to work to supply names for what he fully understood to be primarily twenty-eight cities belonging to the great past of his people, and owing to a misreading of the figures this was at some time increased to thirty-three. He drew on any sources which he could ; first of all on Welsh tradition, reinforced perhaps by popular archaeological observation and a smattering of Latin learning, and then on what he knew of the prominent centres all over Britain in his own time. In later ages the resulting list was taken up by English and Welsh antiquaries, and in Wales enjoyed a vogue throughout the Medieval period. These late identifications however are worthless except in those cases where they are obvious, because they are based on the guesses of pseudo-scholars like Henry of Huntingdon and Geoffrey of Monmouth, and not on any genuine old native tradition.

The Use of Bone Implements in the Old Palaeolithic Period*

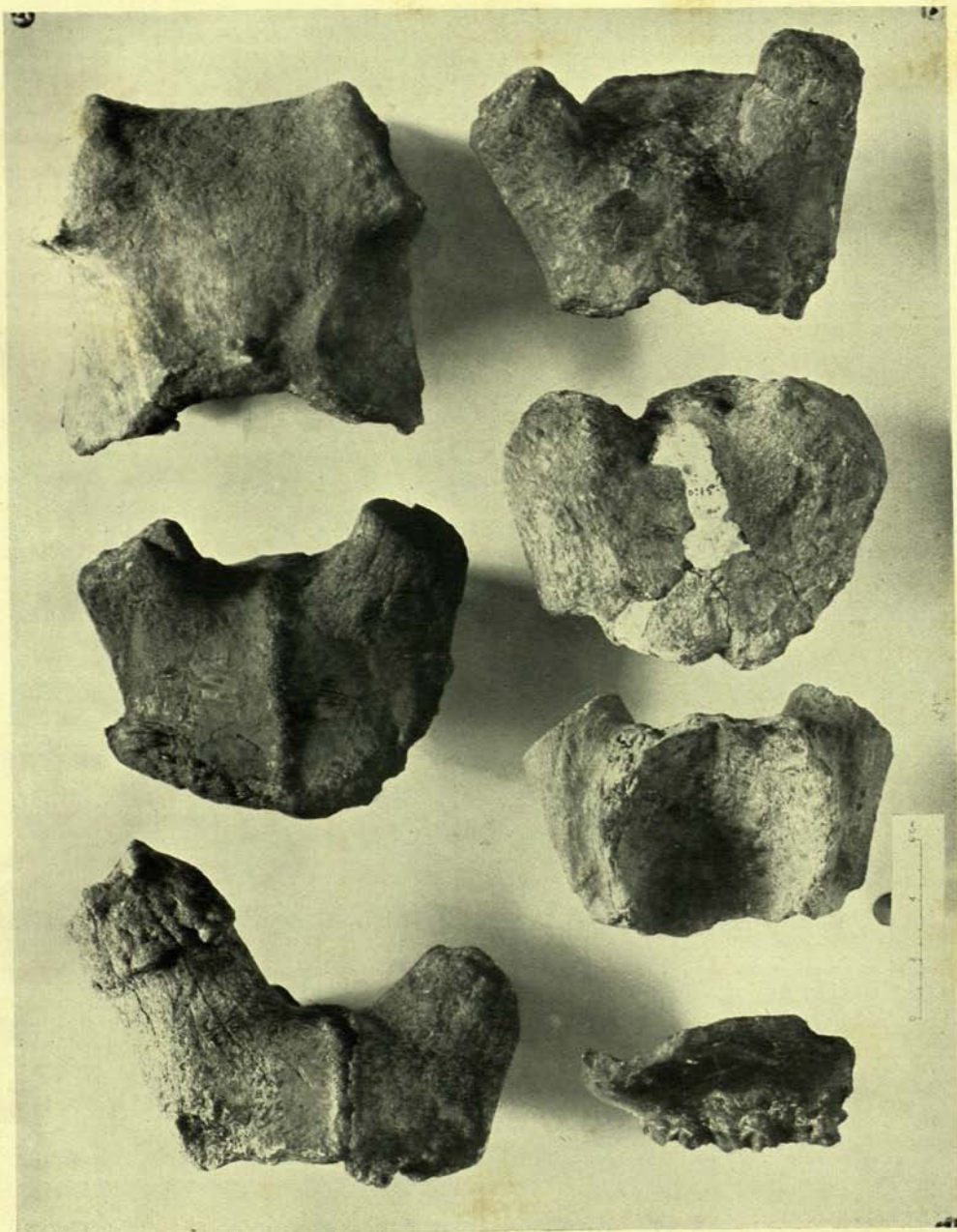
by the ABBÉ H. BREUIL

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IT was Boucher de Perthes and some of his precursors who originated the idea of an age of worked stone: previously the only stone implements recognized as such were polished axes, arrowheads and a few particularly well-made flint knives. On the other hand it is generally agreed that, besides worked stone, which as a rule is all that has survived, fossil man must have used wood for many of his weapons and implements; though with the exception of a pointed stake from Clacton (preserved in peat with remains of *Elephas antiquus*) nothing made of this material is known until we come to the neolithic pile-dwellings. Mainly as the result of the excavations of Lartet and Christy in the Dordogne (1863) it was learnt that hard animal substances such as bone, ivory and deer's horn, which were preserved by the limestone matrix of caves and rock-shelters had also played a large part in the industrial activities of man. This already advanced industry must have been far removed in time from the first utilization of bone, for it shows a technique that is highly developed—a technique in which the splitting of bone is first associated with and then superseded by sawing with graters and smoothing with scrapers. There can be no doubt therefore that the stiletto, spear-heads, etc., of the Later Palaeolithic period must have had more ancient prototypes of worked bone. In fact the only Middle Palaeolithic examples known today of bone-working by means of attrition and scraping are few in number—rib-bones sharpened by rubbing, occasional awls similarly sharpened—and the two large spear-points from the Upper Mousterian of Castillo (Spain) and La Quina (Charente, France). To these, though they are

*A paper read at the International Congress of Prehistoric and Protohistoric Science at Oslo, 1936. Translated by O.G.S.C.

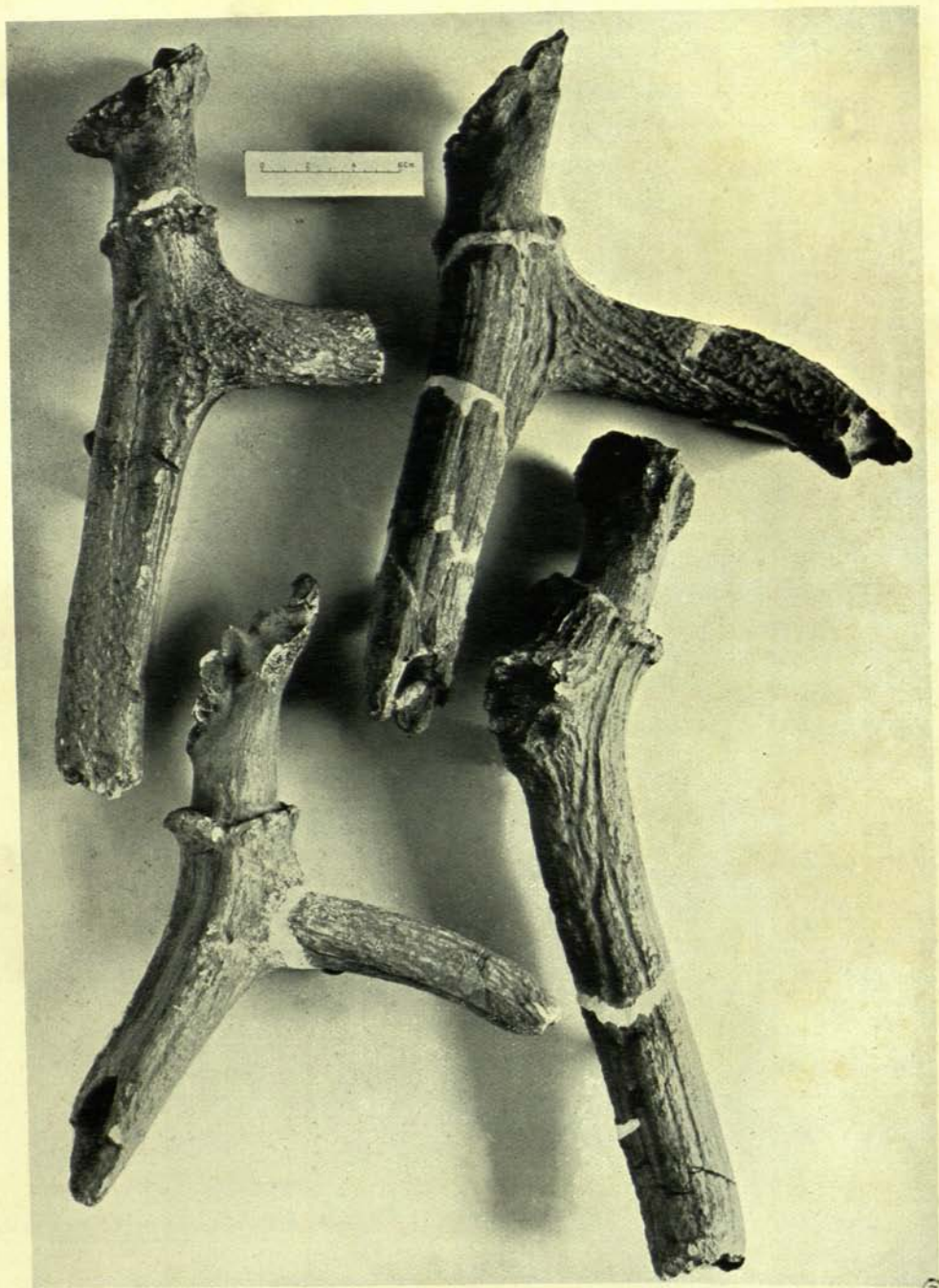
PLATE I



CHOU-KOU-TIEN

1. Shaped frontal bone of *Cervus euryceros pachyosteus* from which the antlers have been cleft.
- 2-6. Frontal bones of *Cervus pseudaxis grayi* treated in the same way except 6, where the right antler is cut off above the burr. Transversal cuts can be clearly seen on the 2 pedicles; they are less visible on 3. The two pedicles of 4 and the left one of 5 have been considerably reduced artificially.
5. The reverse of one of the frontal bones on which the rim of the cavity has been carefully shaped by trimming.
7. Part of the upper maxillary of the 2nd stag, the broken edge has been trimmed like a flint tool.

PLATE II



HORNS OF *CERVUS PSEUDAXIS GRAYI* OF CHOU-KOU-TIEN, SEVERED BY MAN

1. At the base of the artificially reduced pedicle, the frontal tine and principal shaft cut through with a stone tool.
- 2-3. The chief shaft broken across artificially and the frontal tine showing incisions produced by the use to which it was put.
4. Chief shaft severed with a stone tool; the break at the frontal tine is recent. Parts of the frontal bone at the base of the pedicle in 3 and 4 are reduced by trimming.

PLATE III



CHOU-KOU-TIEN

Broken pieces of stag and horse cannon-bones. The broken end has been made use of, this can be seen by the localized wearing down of the point of 5, 8, 9, 10, 11. Most of these points have been shaped by trimming just like a stone tool. 1 and 7 may have served as chisels or wedges; the transversally shaped end is obviously splintered by use.

PLATE IV



CHOU-KOU-TIEN

Flakes of long bones of which one end (and two of no. 14) have been trimmed to a point, often with two small lateral shoulders

THE USE OF BONE IMPLEMENTS

the products of a different technique, one might add the anvil-blocks and trimming-tools from the same strata described by Dr Henri Martin. They were made by utilizing such things as splinters of broken bone, the heads of *humeri* fashioned by percussion or the unaltered phalanges of ox and horse. We should also mention—though we shall deal with them more fully later—the jaws and other bones of the great bear, broken so that they could be held. These were first observed by Garrigou in the Pyrenean caves, but have been found chiefly in Central Europe, where man hunted those animals in their dens. Speaking generally, however, the idea of an extensive use of bone in the Old or Middle Palaeolithic period is not yet accepted by the scientific world.

But he who thinks must recognize the fact that suitable stone, such as flint, hard sandstone, quartzite, quartz, hard limestone or the various kinds of igneous rock do not occur everywhere, and that, to be made into useful implements, they require the application of a complicated technique of chipping and secondary working—and this postulates a long period of experiment before it can be developed. Certain experts have therefore, put forward the suggestion, that before the Age of Stone there was an Age of Wood and Bone ; this view is reasonable if somewhat theoretical, for it is difficult to see how such work could have been possible without the use of sharpened stone.

Let us go back in thought, then, to that dark dawn of the industrial phase of Man. We find him or his intelligent ancestor, surrounded by animals better armed by Nature than himself, lions and bears with teeth and claws, grass-eaters with horns and antlers. What more natural than to rob them of these weapons to use against them ? Ever a hunter, Man had round him the skeletal remains of his victims, quickly unfleshed by himself, by carnivores and by natural agencies. He also encountered on his wanderings the cast antlers of deer and the carcasses of the carnivores' prey. Some of the complete longer bones made excellent clubs with handles not easily broken ; some of the bones could in their natural state be used for pricking and piercing holes ; some large and flat could be used as shovels ; others which were longer, as levers ; yet others which were short and stout might suggest an anvil or a hammer, while such as were broad, thin and trenchant, when grasped, became scrapers and planes.

When Man, armed with a pebble, broke long bones to extract the marrow, like a hyaena, they broke in different ways. Some had articular ends convenient for holding if man wished to use them as

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implements, while the other end was pointed. Others, pieces of diaphyses, had ends that could be used as points or chisels and cutting edges which could serve as knives or scrapers. Unlike the hyaena, Man often broke the bones lengthwise.

Stag-horn recovered from slaughtered animals or picked up on the ground, the natural long bones of dismembered carcasses, fragments of bone artificially broken, were everywhere at hand for the use of our remote ancestors ; they were a form of raw material that was at once both springy and resistant, a kind of animal *stone*, the natural shape being adaptable, or a kind of *wood* more resistant than that of trees.

Fossil man must certainly have made considerable use of bone as well as of wood and stone, particularly where the two last were not naturally available or were difficult to obtain ; and he must have employed the technique of percussion used for making implements of stone, or of cutting, as for wood.

But the reasonableness of an idea is not enough for us to be able to check its correctness by the material facts of observation. It is morally certain that the first men who used stones, before learning to work them, must have used the cutting stones provided by the beds of flints split into fragments by sun and frost ; but we are as yet unable to distinguish such objects from the others, countless in number, with edges retouched by natural mechanical causes.

Are we more fortunate in the case of worked bones ?

We must first eliminate causes of error, and discover what Nature can do to bones submitted to her action, and first of all to the action of carnivores or rodents.

A dead animal lying on the ground immediately becomes their prey ; but only the hyaena has been provided by Nature with teeth that can split fairly big bones, so as to devour not only the marrow, but also the actual bone-fragments. The resulting fracture has some resemblance to that obtained by man when he breaks a long bone crosswise by placing it upon a stone and hitting it ; but it is characterized by certain cup-shaped depressions caused by the teeth. Bones too bulky to be held between the jaws are gnawed by the incisors and canines at the ends or on the periphery. A disc of this kind of the nasal bone of *Rhinoceros tichorinus* is in the Manchester Museum ; it was gnawed by a hyaena whilst the horn was still attached, protecting the adjacent part.

Such a method, which can be produced by other carnivores—especially the wolf—according to their more limited capacities, give

THE USE OF BONE IMPLEMENTS

the long bones, too strong to be broken, extremities which are half chewed and narrowed, thus producing an illusion of human workmanship. Many marrow-bones deprived of their epiphyses, after this gnawing of their softer ends, seem to have been cut across ; but the marks of incisors and canines are visible, and by measuring their distance apart, the size of their consumer can be discovered. Canines can cut into the ends of the diaphyses more deeply on their axial line than on the sides, so that they assume the form of a two-pronged fork ; when this occurs at both ends, the result is an object which looks like a shuttle, and more than one prehistorian has fallen into the trap.

Although all animals without exception, even ruminants, will attack fresh bone and horn—and in South Africa that is one of the causes of the spread of epizooties—it is the rodents which concern us here, particularly two kinds who ‘worked’ in the Old World during the Quaternary Period—beavers and porcupine. But all rodents, either from a hunger for bony substance or to sharpen their incisors, habitually gnaw the bones they meet with, from the marmot and hare to the squirrel and humble mouse. To cut into a bony surface, all these animals drive their lower incisors into the surface to be gnawed more or less at right angles to it, and cut into it with their upper incisors. The former of the two impacts leaves only slight punctuated marks, whilst perfectly clean long gashes generally arranged in pairs, represent the marks left by the upper incisors. If the animal shifted its position laterally, there are a number of parallel incisions ; but if it remained longer in one position, moving its head to each side in turn, it produced a fan-shaped pattern of incisions. When instead of small or medium sized rodents, beavers or porcupines have been at work, the width of the gashes, their depth and distinctness recalls the marks left by an implement of hardened steel. These marks suggest human workmanship, particularly in the three following instances :—(1) at the end of a bone or fragment of bone, when the incised facettes produce a worked pseudo-point. An instance of this is the bone claimed to have been worked by the Piltdown man, but whose author was really a big species of beaver, perhaps *Trogotherium*. (2) A second instance is the gnawing of a skull-top which may appear to have been made into a cup, as in the case of a human skull found in a cave near Cape Town. (3) A third instance occurs when peripheral gnawing of a flat bone has produced a complicated shape, apparently intentional, such as I have observed in the case of a flat bone from the caves of Tsitsikama, now preserved in the museum at Port Elizabeth ; this at first sight

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appears to have been cut by man in a triple lobed symmetrically notched shape.

It may therefore be stated that fresh bone can either be broken by hyaenas, or gnawed at the end by wolves, or incised, but not broken, by rodents. We do not include cases where animal-bones have been broken by a fall, or marrow-bones thrown from a height on to rocks by lammergeyers.

Let us return to the bones only partially consumed by animals ; those left on the surface are dissolved and quickly disappear, and the same thing happens to those which are buried in siliceous soil that is permeated by rain-water. Those buried at a shallow depth in soil covered by vegetation are attacked by roots, which cover their surface with a tangled and complicated network of hollow lines.

All buried bones gradually lose their gelatine ; from being firm and coherent they become porous, and split lengthwise ; and their concentric layers tend to scale off. If an attempt is made to break them when they are in this condition, they crumble and fall into fragments with indented edges ; they are no longer elastic and resistant. This does not exclude the possibility that burrowing animals, digging their earths, may not leave on bones the marks of their claws and teeth ; but one can see by the look of the surface attached that such have been produced on a fossil bone that was not usable by man. Attention must be called, however, to false trepanning, or to such genuine instances as have been enlarged by mice seeking to make an exit, after having entered a skull by the occipital orifice.

In this first stage of fossilization, the organic matter of the bone has more or less disintegrated, and the bone has acquired a porous consistency which makes it ready to absorb those mineral salts which at a later stage will gradually petrify it. When this fossilization is far enough advanced, it again becomes coherent, but not elastic ; usually the interior will have a different colour from the exterior, being darker, except in the case of burnt bone, whose external surface becomes white again (or blue in certain special cases), whilst the interior becomes black. It may happen that Man will try and work these highly fossilized bones, as if it were some sort of stone ; but at this stage the only natural mechanical agency involved—and it *is* involved—is soil subsidence ; when this occurred in the previous stage, the bone is broken and crumbles ; in the other it is cleanly fractured, or striated during solifluxion, but it remains unsuitable to serve as a raw material of human industry. We may therefore ignore it.

THE USE OF BONE IMPLEMENTS

Except for fossils made into pendants for ornament (teeth of large fossil bears, pierced by the Aurignacians of Gargas) only fresh bone could have been used by Man ; so that the only causes of error we have to anticipate are, for fractures, chiefly the hyaena ; for blunted ends the same animal and the smaller carnivores ; for sharp incisions, the large rodents, and beaver. To these may be added : for broad superficial marks, those produced mechanically by rolling ; in caves, by the going and coming of animals, and the generalized solutions of soil not sufficiently calcareous, these being often strangely penetrating (producing sometimes well formed holes).

Let us now consider the use made by palaeolithic man throughout the ages of some slightly modified parts of his victims' skeletons. Taking into account the reports (mainly German), bearing on the lairs of the cave-bear, which Man visited on hunting expeditions, we shall rely mainly on evidence derived, on the one hand from the lower deposits of the cave of Castillo (Santander, Spain), excavated by H. Obermaier, P. Wernert and myself ; and on that, so carefully collected, in the Chinese excavations of Chou-kou-tien, principally by my friend and fellow-worker W. C. Pei. Occasional reference will be made to the still older site of Ni-ho-wan, and to the later one at the bottom of the great loess formation of Choei-Tong-Keou, investigated, like the preceding one, by Fathers Licent and Teilhard. Beginning with the head and its attachments, we proceed to the members and trunk.

Horns of ruminants.

Those of large dimensions do not appear to have attracted human attention, though one might expect them to have removed the horny sheath from the core. It is the same with the big Ibex, except for a Mousterian frontal bone from Pocola, Istria, which has a horn-core cleanly cut with a flint at some distance from its base (Trieste Museum). The horn-core of a small bison from Chou-kou-tien seems to have been sectioned ; a skull of *Boopsis Sinensis* (cf. Musk-ox) also from Chou-kou-tien has clearly had its two horns removed with a sharp tool.

The horns of slighter animals, on the other hand, have been much sought after in all periods ; but they are rare at Chou-kou-tien, whence come only two cut gazelle-horns, and the skull of *Spiroceros*, with a horn cut off halfway up. At the present day, the Mongols use gazelle-horns as daggers. In the Ordos sites and at Ni-ho-wan, where they are common, they were also so used, and those parts of the skull which were inconvenient for the grip were knocked away. The same thing

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occurred in Algeria, Palestine, and at Le Placard (Saiga horns) and other sites in the Upper Palaeolithic.

Deer-antlers.

Young or small antlers were worked at Chou-kou-tien like those just described ; either the pedicle was cut by stone implements, or the skull-part remaining attached was knocked away.

More bulky antlers had to be cut up, so at Chou-kou-tien and at Ordos, the tines to be sectioned were first slightly burnt, and then attacked with stone chisels, a groove being cut, usually on one side only ; then the horn was broken off roughly by pressure (PLATE II). This technique of Chou-kou-tien and Ordos occurs also at La Quina for reindeer-horn, in the Upper Mousterian, and also, for deer-horn, in the Mousterian and Premousterian levels of Castillo. It had been found before in the Sammenian of Ni-ho-wan. The fragments thus removed consist mainly of points of tines, the ends and round surface very often having on them scars and marks resulting from use. Sometimes it is clear the end is worn by use, and some scraping is intended to re-sharpen the blunted point. Such objects persist throughout the Stone Age.

The middle and end parts of heavy antlers, still retaining one or more tines, the shaft forming the handle, occur in the neolithic flint-mines and at Chou-kou-tien, Ordos, etc.

Chou-kou-tien and Ordos have yielded a great number of basal parts of antlers, mainly from shed horns, whose shaft was used as a handle ; their burr shows that they were used as hammers. Other bases, cut short, were used for grinding.

Some medial portions whose spongy part seems to have been scooped out, were therefore probably used as hafts.

Skulls or parts of skulls.

At Chou-kou-tien as in Ordos and at Castillo (Mousterian) and in the loess of Alsace, the cavity of the frontal bone has been carefully battered (from the outer surface of the skull) into a regular form, the antlers having been cut off (PLATE I). It is possible that, originally, the object of this procedure was to reduce the weight of the antlers that were carried back to the camp ; but quite often the stumps have been reduced as much as possible, as if to make a little cup ; and burning has sometimes been used to achieve this. An identical technique occurs on other brain-pan fragments at Chou-kou-tien. In the upper level, part of a skull-cap of *Sinanthropus* thus worked was found, whose outer surface

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is scratched and polished by use. These deer-skull-cups are also often worn on the edge. Such marks are found too on human crania of the Solutrean and Magdalenian periods from Le Placard, where they were used as cups.

Certain parts of the skull, such as the occipital orifice with its articular ridges, are often isolated by careful peripheral trimming.

Jaw-bones.

A long time ago, Dr Garrigou suggested that the lower jaws of the great bear were used as tools or weapons after their projecting portions had been knocked off. Two examples, presented by him to the St. Germain Museum, have actually been worked in that way, and the part that must have been held in the hand is noticeably worn and burnished, in contrast to the rest of the bone. The same thing can be observed at Chou-kou-tien in a series of mandibles of boar and jaw-bones of a large feline, the two parts still joined.

This is much less certain in the case of the jaw-bones of a very large type of hyaena from this site. The mutilation of the jaw-bone is here often a natural process, due to a spontaneous fracture whose point of origin is a longitudinal splitting of the bone at the beginning of its fossilization. Later the pressure of soil has separated the parts. I pass over the probable use, at Chou-kou-tien, of the snout of a large feline with its two canine teeth, or (as rasps, etc.) of the lower or upper jaw-bones of *Cervus*.

On the other hand I can record that many very strong and complete mandibles of *Cervus euryceros pachyosteus* from Chou-kou-tien had been used just as they were, the horizontal part serving as a handle and the point of the coronoid apophysis (which has thereby often been slightly blunted) serving as the active part.

I may mention in passing that in the very ancient Acheulean deposit of Torralba (Soria), the disposition of the lower jaws of *Elephas antiquus* around certain spots seems to show that they were used as seats.

Long bones.

At Chou-kou-tien an enormous humerus of rhinoceros seems to have served as a bench on whose flat surface something was cut with stone; whence it comes that its surface has many interesting slashes. But we are mainly concerned with broken bones.

Spongy lumps from the heads of thigh-bones and humeri, and even

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of short bones such as vertebrae, have been practically peeled and used to rub down something, perhaps to polish and at the same time to grease leather or wooden handles ; this is particularly noticeable in the Upper Palaeolithic.

Articular ' apples ' have frequently been removed and shaped as sling-stones from Chou-kou-tien till the end of the Upper European Palaeolithic.

The distal ends of radius and tibia have been treated so that the medullary cavity can serve as recipient. From Chou-kou-tien till the end of the Upper European Palaeolithic.

Long bones of all kinds, especially humeri and cannon-bones broken transversely, have had their broken edge retouched just like a flint, either as a point or a chisel edge ; this has often been worn and splintered by use right up to the articular end, which was used as a handle (PLATE III). In other instances a retouched transverse fracture has had its edges regularly trimmed, and seems to have been used as the handle of a tool inserted in the medullary cavity. These facts may be observed at Ni-ho-wan and at Chou-kou-tien up till the end of palaeolithic times and even down to the historical period.

The convex distal or proximal ends, the stump of the diaphysis treated or removed by percussion, have been often worn very considerably on their articular surface, for an unknown purpose. This is almost unknown to me, except at Castillo (Santander), where it appears slightly at the end of the Aurignacian, has its maximum development in the Middle Solutrean and extends down to the older Magdalenian. There are a few rare examples at the same levels in the Dordogne.

The ulna and humerus bones of the great bear, converted into sharp pointed implements and daggers, abound in all the caves where Man hunted him. In the same way, stilettos (metapodes) of ruminants or equidae were used, almost without modification, except that produced by use in every period, as also were the ulnae of the smaller carnivores and of hares.

Fragments of diaphyses which were not split and whose broken ends were trimmed, may have been used as handles. The very big bones could only have been used, as blocks or working tables, after flakes had been detached from them by hard blows. There are a few such flakes at Chou-kou-tien and Ni-ho-wan, but they are numerous in the Mousterio-aurignacian of the Ordos and in the Mousterian and lower levels of Castillo (Spain). They were roughly re-chipped and re-trimmed like stone flakes. The long and relatively straight flakes from

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long bones split by Man, which abound in all the sheltered sites where he lived, were generally used from Ni-ho-wan and Chou-kou-tien, to the Ordos, and in all the sufficiently protected levels of the Old Palaeolithic, especially at Castillo (Spain). They continued to be used in the Upper Palaeolithic and probably still later. Some of them have been re-trimmed at one or both ends like flint, to sharp or blunt points, or as chisels or scrapers (PLATE IV). Often, as in the preceding instances, the used part shows—besides the re-touching, which is sometimes absent—a strictly localized worn surface or a very definite splintered crushing.

Many of the narrower examples have both ends splintered and appear to have been used as chisels or punches. This type, so common at Chou-kou-tien, exists as late as the Azilian of Scotland, where its use as a flint-flaker is obvious. It has been found, with the same signs of wear, on sites of the latest (certainly Red-skin) stone age in North America. Other flakes of long bones are carefully worked on one or both sides, generally on the inner surface, and seem related to scrapers.

These oblong fragments were often selected by the Mousterians and the men of the Upper Palaeolithic as tools for pressure-flaking flint, as Henri Martin has shown.

Short limb-bones.

These are ankle-bones, heels, wrist-bones, tarsal bones and foot-bones (phalanges) of pachyderms and ruminants.

The phalanges of horses, bison and even reindeer of La Quina (Upper Mousterian) were used, as Henri Martin has shown, as anvils, probably in the working of flint and wood. Rare examples occur elsewhere (Castillo, Montières).

Ankle-bones, I do not know why, are not so frequent at La Quina ; but at Chou-kou-tien, and above all in several ancient levels at Castillo, there are many examples, mainly of Cervidae, occasionally of the larger Bovines, which have been worn down and the angles often crushed or even broken by a powerful mechanical force for an unknown purpose. The heel-bones often have the part opposed to their articular surface cut off by an oblique fracture ; this I should interpret as the result not of use, but rather of the tearing off of the Achilles tendon to make use of its fibres.

Shoulder and iliac bones.

Shoulder blades of moderate size are still used by many primitive peoples as shovels, or, sharpened, as knives. It is probable that this

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has been so at all periods, but the bad preservation of the thin blade of the shoulder-bone in ancient deposits makes it difficult to prove.

It is easier to observe that very often the cup-shaped articular surface of the shoulder-blade has been isolated by fracture or by percussion and chipping; this has occurred from Chou-kou-tien to the older levels of Castillo and as late as the Upper Palaeolithic. It often happens that the broken part has been worked to a point that is capable of being stuck in the ground.

As for the iliac bones, since the days of Chou-kou-tien, and in the Mousterian and older levels of Castillo, and during the whole of Upper Palaeolithic times, the coxal cavity was fashioned into a saucer; either it was cut closely all round, though this was rare, or the approaching branches were cut across and re-trimmed by blows till a tripod was formed. Some of these hollows have deep scratches on their sides.

Trunk-bones.

Ribs of the size of ox and horse have been variously used from the time of the Mousterian of La Quina and Castillo; some are sharpened very carefully at the end. The other rib-fragments, from the same sites, often show traces of hard blows at one end, the other being much blunted or rounded by use.

Shorter fragments are frequently of a rather uniform length, showing deliberate intention; this is also the case with the long apophyses of dorsal vertebrae of Bison.

Those vertebrae which possess a marked articular cavity have often had the other parts struck off. The ring formed by certain cervical vertebrae has also sometimes been similarly isolated by the removal of the projecting portions. This occurs sporadically from Chou-kou-tien to the Upper Palaeolithic.

Such are the most obvious uses of the bony skeleton of animals. As can be seen, many are not confined to the Old or Middle Palaeolithic, but continue down to the Upper Palaeolithic and even beyond. There is nothing at all extraordinary in this; indeed it is in agreement with the teaching of comparative ethnology. Thus I have heard that in recent excavations of ancient Eskimo sites, the number of tools consisting of slightly worked bones is very considerable. But this is a fact that can hardly be authenticated on the open sites in our own country, where bone is either not preserved at all, or preserved only in a sorry state.

THE USE OF BONE IMPLEMENTS

With the exception of the great loess deposit of China which by its great thickness has preserved bone remarkably well, one must, to have it in a condition that allows of proper consideration, resort to caves or well protected rock-shelters.

Was there originally, as Professor Menghin suggests, an Age of Bone (and Wood also, I suppose)? One cannot affirm it absolutely. But certain indications at Ni-ho-wan and Chou-kou-tien may incline us to believe at least that, at some ancient epoch, the use of bone may have been of more importance than the use of stone.

But it is possible that this is merely a single instance of a more general observation; in the West, at the Mousterian period, the importance of bone used as raw material is, in a number of regions poor in good working-stone, in inverse ratio to the latter. It is an 'animal stone', mainly worked by percussion like any other stone, and, as regards antlers and horn, like a 'piece of wood'. Only this material more often than not has been destroyed or too much abraded in a soil unfavourable for its preservation, and that is why the existence of a bone industry contemporary with the old Stone Age has generally passed unnoticed, or very imperfectly observed. Perhaps also untoward publications of bones worn by natural agents, or gnawed, has contributed to cast discredit upon the genuine bone implements of these very remote epochs.

An Ancient Chinese Capital¹

Earthworks at Old Ch'ang-an

by CARL WHITING BISHOP

Freer Gallery of Art, Washington

NOT least in interest among subjects of archaeological study is that which has to do with the types of fortification constructed by organized communities in the past. These, once the habit of town-dwelling had become fixed, seem to have tended to fall into two major classes: the *arx*, acropolis, or citadel, one of whose functions it was to provide a temporary refuge in emergency; and the *enceinte* or city-wall proper, designed to afford permanent protection to the group living within it. Sometimes the two forms occur in combination; more often, singly.

The first type we frequently, though by no means always, find situated on a height; the acropolis of Athens and the Capitoline Hill at Rome are familiar examples. The second class, on the other hand, seems to have developed more especially in those alluvial plains on which sprang up the great river-valley civilizations of the Ancient World. To it belong the tremendous earthworks constructed slightly over two thousand years ago about the city of Ch'ang-an (meaning 'Long Peace'; possibly Ptolemy's 'Sera Metropolis'²), the capital of the then recently established Chinese empire.

It was in 221 B.C.—the year, it will be recalled, when the Carthaginian troops in Spain proclaimed Hannibal their commander-in-chief—that at the opposite end of the Old World the great conqueror Ch'in Shih Huang-ti³ set up, on the ruins of a very ancient and separatist Chinese feudalism, a centralized and bureaucratic empire which in many details of its organization strikingly recalls the one established some three centuries earlier in western Asia by Darius the Great.

¹ The following account contains material included in a report, now in course of preparation, dealing with the investigations conducted in China during the period 1923-1934 by the Freer Gallery of Art, Washington, D.C.

² On this identification see, e.g., René Grousset: *Histoire de l'Extrême-Orient* (Paris, 1929), I, 242 and note 5.

³ This name, or rather title, means literally 'First Emperor of the Ch'in (Dynasty)'; he is mentioned, in another connexion, in *ANTIQUITY*, March 1937, XI, p. 27.

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Shih Huang-ti's dynasty, the Ch'in⁴ (or Ts'in, as the name is sometimes spelled in English) fell a very few years after his death. There ensued a brief period of civil war and general turmoil. Out of this there emerged as victor a low born but nevertheless very able adventurer who thereupon founded the Former or Western Han Dynasty (206 B.C.-A.D. 7).⁵ This was the man usually known in later history as Han Kao-tzū (his posthumous title); he played a part comparable to that of Octavius not quite two centuries later in putting an end to a period of civil strife and setting up a stable government. He at first thought of fixing the capital of his newly won dominions a short distance south of the Yellow River, in what is today the province of Honan. Ultimately, however, he established his permanent official residence some two hundred miles farther to the west, in central Shensi province. The city which he thus founded soon became one of the greatest of its day, anywhere in the world. Ch'ang-an during the period of its prosperity may have been rivalled in population and perhaps in extent by certain cities of the Near East and of northern India; but Europe certainly had nothing as yet even remotely comparable to it.

Then as always, however, Chinese architecture was essentially one of wood and *terre pisé*. Hence the ancient capital of the Hans has left us, above ground at least, but few remains of itself. Of these the most notable are portions of its great rampart of solidly tamped earth, and what is said to have been the foundation-mound of the principal building in the imperial palace-enclosure—the celebrated Wei Yang Kung, of whose almost fabulous splendour and magnificence many tales are told.

The site of the ancient city lies four or five miles northwest of Hsi-an Fu (sometimes spelled 'Sianfu' in English), the capital of the province of Shensi, and a little south of the historic Wei, a western affluent of the Yellow River. The country hereabout is an intensively cultivated alluvial plain which rises into hills some distance to the south.

⁴ From this word almost certainly came our name 'China'. Those who deny this (usually on the ground that the name 'China' ante dates the founding of the Ch'in empire) forget that the state of Ch'in was established several centuries earlier, and long before Shih Huang-ti's time had already annexed the eastern termini of both the great land-routes linking the Far East with the Occident, the one by way of Central Asia, the other through Farther India.

⁵ The Han Dynasty, it should be remarked, was the first Chinese ruling house to spring from the ranks of the common people. The founders of all the earlier ones had belonged to the turbulent, hard-drinking, chariot-fighting feudal nobility, the possessors of the Chinese Bronze Age civilization (in regard to the latter point cf. *ANTIQUITY*, December 1933, VII, p. 404).

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The morning was misty, the visibility poor ; but as we approached the site we began to see ahead of us a lofty and now shapeless mound, obviously artificial in origin. This stood, we found, at the south-eastern corner of the ancient city. Closer examination showed that it was composed of successive layers of *terre pisé*, rammed very hard and averaging about four inches in thickness.⁶

The present height of the mound we estimated at around fifty feet. That it had once been surmounted by a large building of some sort, presumably a wooden castle, was indicated by the occurrence, both on its sides and in the loose earth at its foot, of large gray unglazed roofing-tiles of the kind used in China during the Han period. Lying all about was much broken pottery, in part likewise of Han date. On top of the mound was a ruinous square beacon-tower of gray burnt brick ; this structure, of a type still to be seen all over northern China and formerly used in the transmission of smoke or fire signals, was probably not over three or four centuries old. From it we could see, stretching away to north and to west, the remains of the ancient city's great ramparts of earth. These, though in some places still quite well preserved, were for the most part much eroded, terraced for cultivation, and here and there almost completely dug away.⁷ Their entire perimeter we could not attempt to trace, for want of time. Old Chinese maps suggest however that their circuit is somewhere around fifteen or sixteen miles ; they indicate too that the old city was roughly quadrangular in plan.

Part at least of the material composing these ramparts was pretty surely taken from what was now a dry moat or ditch which we saw just outside them. This we found, at the point where we measured it, 160 feet wide, with a present average depth, even though now much silted up, of nearly 10 feet. If it had ever served as a wet moat, the water to fill it must have come from a stream, shown on old Chinese maps but now no longer in evidence, which seems to have flowed into it near the southwestern corner of the city.

Immediately west of the great corner mound just mentioned, there was in the south wall of the ancient city a wide opening through which

⁶ Recent excavations at the two opposite ends of the Asiatic continent have shown that the use of *terre pisé* construction dates back, in China at least to the second millennium B.C. and in the Near East considerably earlier still.

⁷ Such accumulations of earth, on account of their high ammonia content, are much used by the northern Chinese peasantry as fertiliser. Analogous practices are found elsewhere, as for example in the *terremare* of north Italy and the *terpen* of west Friesland.

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ascended (see *post*) the cart-road by which we had come out from Hsi-an Fu. This gap provided us with an excellent cross-section of the rampart as well as a convenient opportunity for measuring its profile.

It proved to have been constructed throughout of layers of *terre pisé* identical with those already mentioned, and was quite without anything in the way of a revetment. Closely similar in their method of construction, except that they are usually provided with outer and sometimes also inner facings of large gray burnt brick laid in lime plaster, are the walls of many existing Chinese cities (PLATES I, II). Occasionally, as for instance in the 'Red Basin' country of the western province of Szechuan, where an easily worked red sandstone is readily procurable, these revetments are of dressed stone laid in regular courses of equal thickness, recalling the *opus isodomum* of Vitruvius. In general, however, the walls of Chinese cities have always been of earth, in later centuries generally, though not always, faced with brick. Significant of this is the fact that the ideograph for 'city-wall'⁸ has as its determinative or 'radical' the character for 'earth'. The original Great Wall of China, constructed a few years prior to the founding of Ch'ang-an and just at the time of the Second Punic War, was likewise of earth, as indeed are long portions of it still (*cf.* PLATE III).

The ancient rampart which we were studying rested directly upon the original surface of the soil, without the interposition of a stone plinth or a damp-course of any kind. Its thickness at the base we found to be 350 feet. Protruding from the western side of the aforementioned gap, near the top of the wall, were remains of what had evidently been a drainage-system of gray unglazed tile; for the region, though in general comparatively dry, experiences torrential summer rains. At the foot of the rampart's outer face, still quite steep (owing to the durability of the *terre pisé*) even after the lapse of twenty centuries, we found traces of a narrow berm (see FIG. I, drawing of cross-section of rampart), now almost worn away. It may originally have been 15 feet wide, possibly even less; in any case barely enough, it seemed, to withstand the thrust of the vast mass of rammed earth above and behind it.

The vertical height of the outer face, above the berm, we found to average 25 feet in its present state. We noticed particularly that there were in the line of the wall none of those rectangular projections or salients, often loosely called 'bastions', seen in many of the Chinese

⁸ The same character, pronounced *ch'êng*, also means 'city'; for according to the traditional Chinese way of thinking, the wall is what makes the city.

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city-walls built during more recent centuries (see PLATE IV). On the contrary, at Old Ch'ang-an we saw only the long straight curtain-wall, with no provision, save possibly at the city gates (see *post*), for the directing of a flank fire against bodies of assailants.

Extending back from the brink of the outer face of the rampart were the remains of a platform or parapet of *pisé*, once no doubt level but now much cut up by erosion and cultivation. This was 42 feet across at the widest of several points where we measured it; while in places its now very irregular inner edge rose as much as 10 feet above the terreplein behind it. The latter sloped gradually and on the whole evenly downward to the general level of the area inside the walls; there was no sudden change of profile to indicate where the terreplein had terminated and the inner face of the rampart had begun (*cf.* FIG. 1).

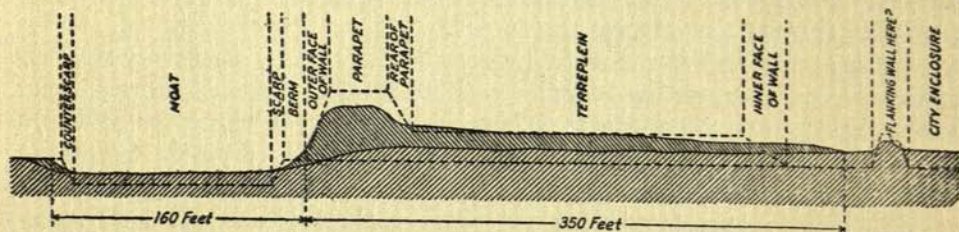
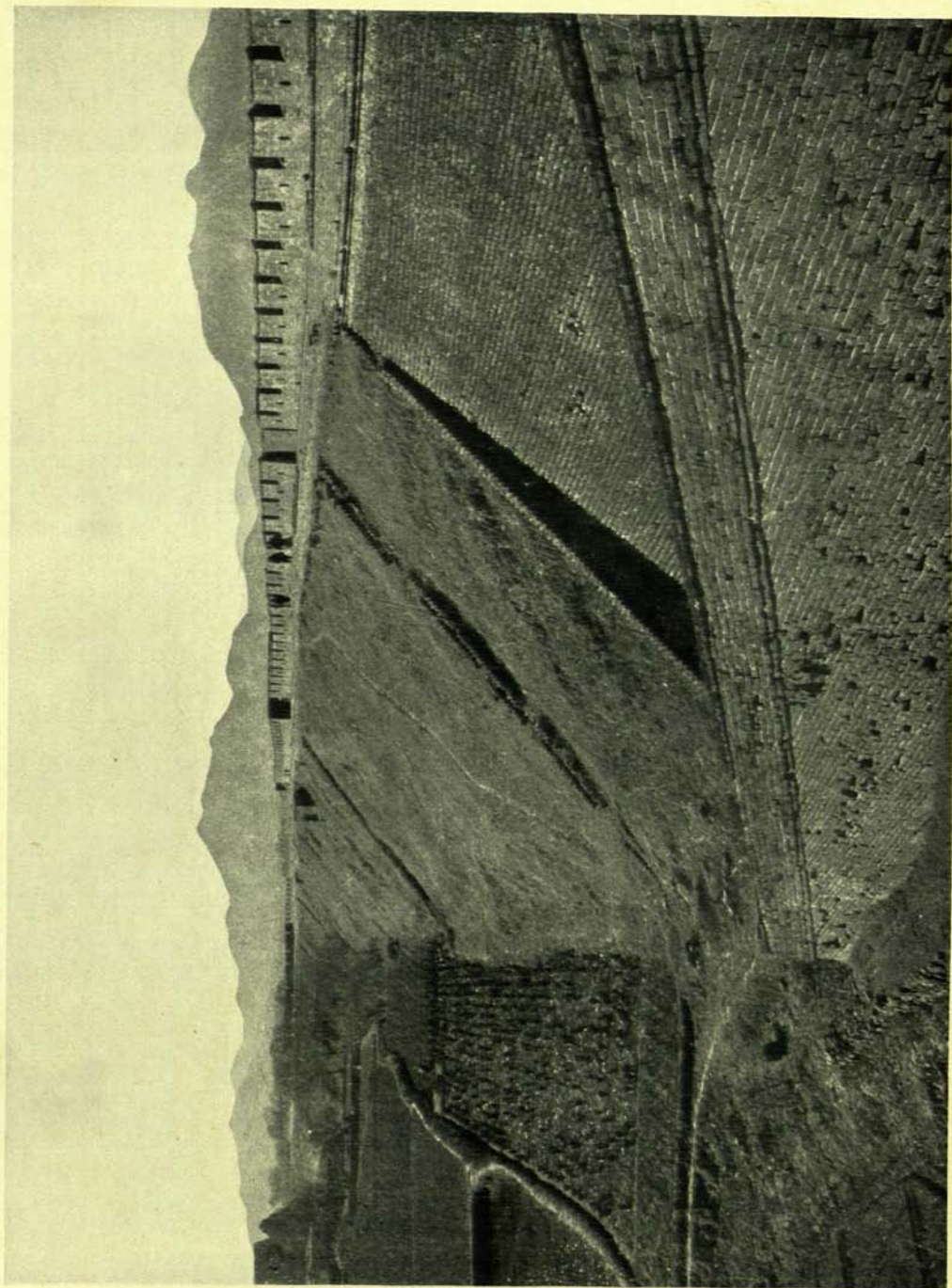


FIG. 1. DRAWING OF PROFILE OF RAMPART, OLD CH'ANG-AN;
SUGGESTED RESTORATION IN BROKEN LINES

That this did not represent the original condition, however, appeared likely, for the following reasons.

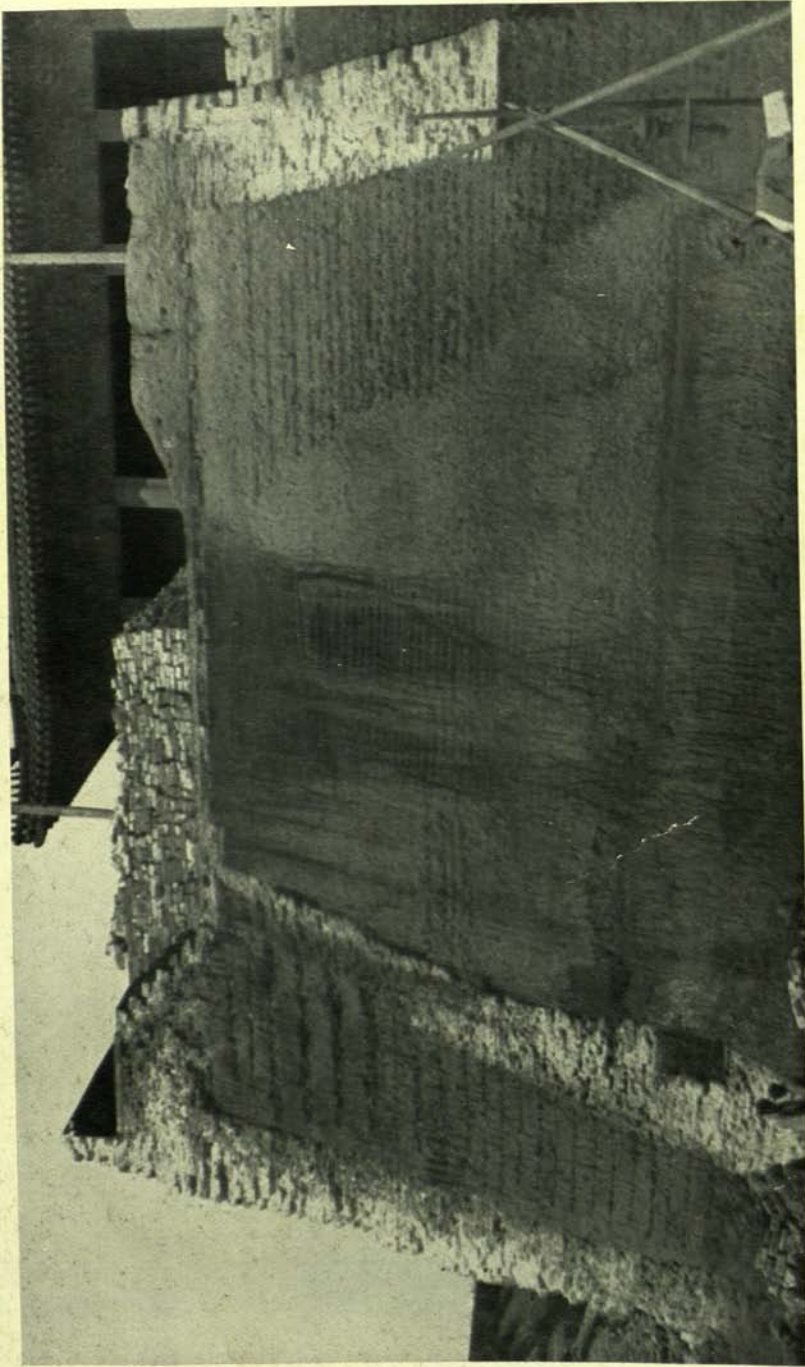
We found, in the first place, that this long interior slope was for the most part covered with uncompacted earth, in places to a depth of 4 or 5 feet and obviously washed down from the parapet above. Secondly, at certain points beneath this layer were to be seen portions of what appeared to be a continuous stratum containing Han roofing-tiles, bricks, and potsherds and resting directly upon the tamped earth of the original *agger*. These facts suggested, first, that the top of the parapet had once been somewhat more than 10 feet higher (see *ante*) than the terreplein; and, second, that on the latter had once stood buildings, erected presumably on a level, not a sloping, surface. Thus we might reasonably suppose that the rampart as originally constructed had had, in addition to a parapet, a true terreplein and a distinct inner face—the latter doubtless much lower than the outer one and now completely masked by detritus washed down from above.

PLATE I



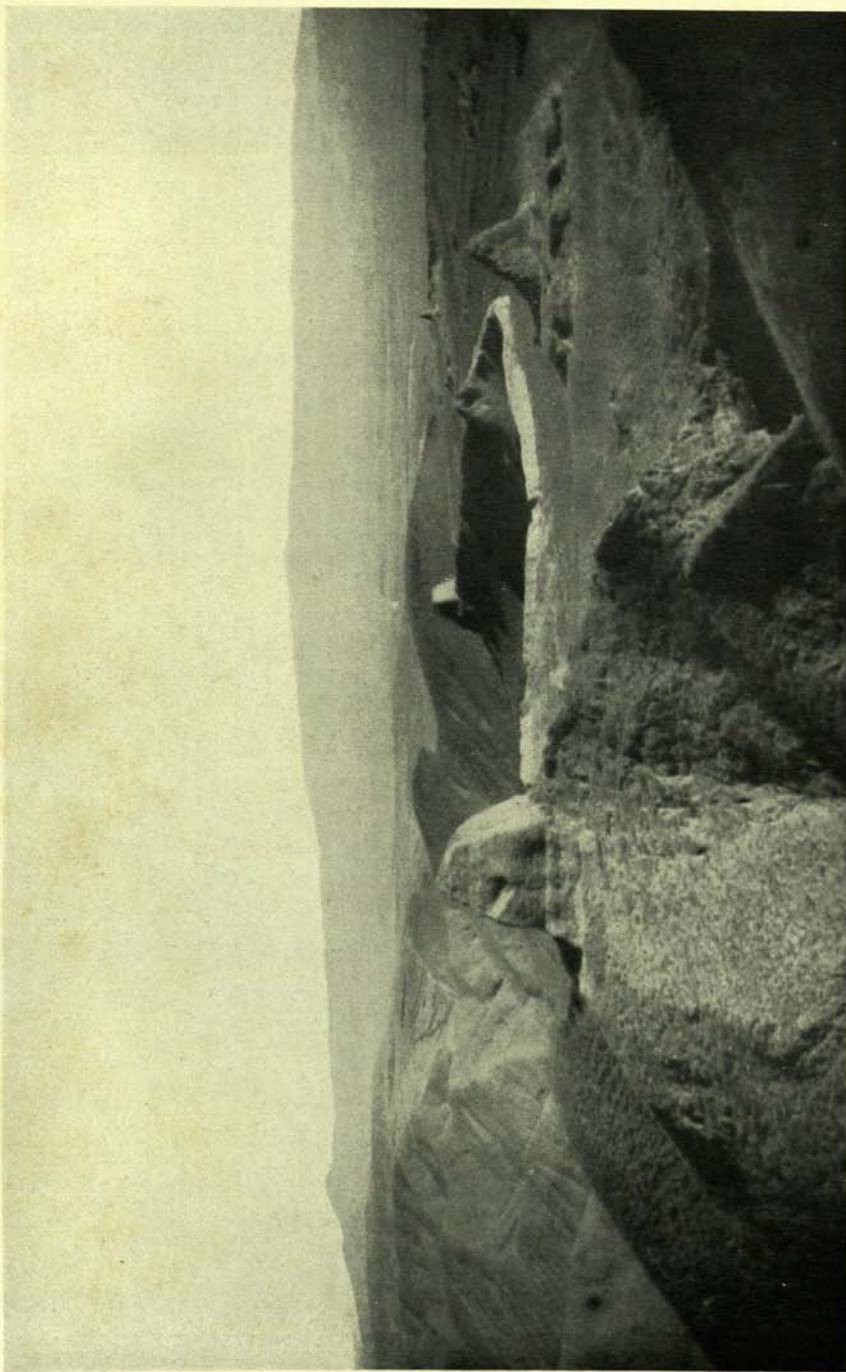
INNER FACE OF CORNER OF CHINESE CITY-WALL, WITH RAMP FOR ASCENT EXTERIOR FACED WITH BRICK (see p. 71)

PLATE II



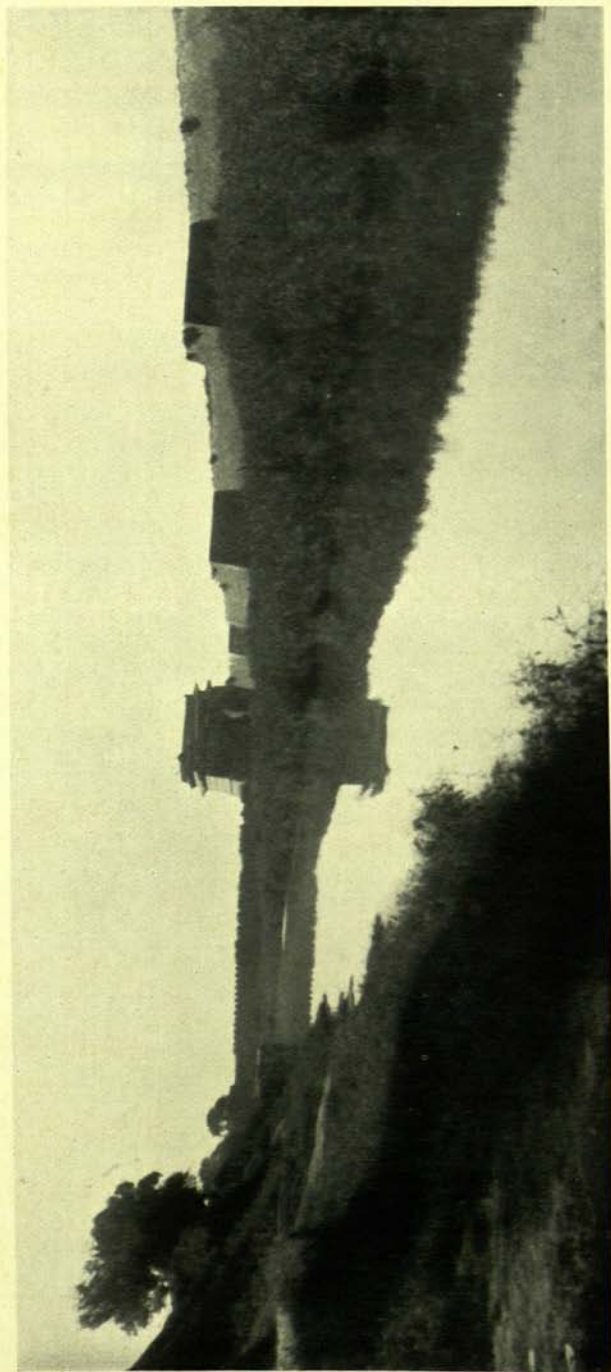
CROSS-SECTION OF CITY WALL OF PEKING, SHOWING CONSTRUCTION ; FACED ON BOTH EXTERIOR AND INTERIOR WITH BRICK (see p. 71)

PLATE III



PORTION OF GREAT WALL OF CHINA, NORTHWEST OF PEKING, BUILT OF EARTH WITH EARTHEN TOWERS (see p. 71)

PLATE IV



PORTION OF EASTERN WALL AND MOAT, PEKING; TO SHOW 'BASTIONS' CORNER TOWER IN DISTANCE (see pp. 71-2)

AN ANCIENT CHINESE CAPITAL

As already stated, the cart-road from Hsi-an Fu entered the ancient city enclosure through a wide gap at the eastern end of the southern wall. This opening, we felt certain for several reasons, indicated the spot where once had stood a city-gate. None of the old Chinese maps of Ch'ang-an appears to show a gate at this spot; nor does it seem very probable that one should have been placed there; for gates do not ordinarily occur at the corners of Chinese city-walls. Possibly the gap in question may have been cut through the rampart at some time subsequent to the original building of the wall.

Be that as it may, the track here mounted quite steeply and once inside the *enceinte* turned abruptly to the left or west. This change in direction brought it parallel to a low rise in the ground directly across the opening and a short distance inside or north of it. Whether this rise represented what had originally been an earthen wall forming part of the defences of the gate, we were unable to determine by inspection alone. But had there been such a wall, its effect would have been to compel an attacking force, once it had broken through the gate, to turn sharply to the left and thus expose its right or unshielded side to an enfilading fire from the defenders.⁹

For some 400 yards or so to the west of the above gap we found the gigantic *agger* displaying in general much the same profile and dimensions as those just described. Then came a second wide opening, where, we felt sure, there had formerly stood another gate. Flanking this on either side, on top of the rampart were the badly eroded stumps of two mounds. On these, it appeared likely, had once stood twin gate-towers, doubtless of wood; for in the earth about their bases we found embedded numbers of large roofing-tiles of the kind already mentioned. Such gate-towers seem sometimes at least to have been joined by a covered gallery of wood extending from side to side above the top of the gate proper.

The Chinese gate-tower of later centuries, as is well known, has been a single structure built *directly over* the opening in the city-wall, usually in two or three storeys, with the up-turned roof corners so familiar on Chinese buildings.¹⁰ What appears to have been the older

⁹ Shields formed part of the equipment of the Chinese warriors of the time, as shown, for example, on the famous Han 'reliefs' (in reality incised drawings on stone slabs) from the province of Shantung and by numerous passages in the surviving historical records.

¹⁰ These upward-curving roof corners were a post-Han development in Chinese architecture. Until long after the beginning of the Christian era, Chinese roofs had straight lines.

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type, with twin towers *flanking* the gateway, is still however to be seen in a few provincial towns.

A road passed through this second gap also. Upon entering the city it turned, like the other, at a right angle towards the west. Here too this abrupt change in direction seemed to have been determined by a transverse rise in the ground just inside the opening.

Extending from this second gap directly across the moat to the counterscarp, we found what seemed once to have been a causeway, now much broken down. This, as far as we could tell, had not been constructed of *terre pisé*, but had been merely a strip of the original soil, left untouched when the moat was dug; it thus recalled in a way the 'interrupted ditches' found at certain prehistoric sites in the Occident. Over its remains passed the road mentioned in the preceding paragraph. We had noticed nothing suggesting the former existence of a similar causeway at the first gap—perhaps an additional indication that the opening there was made at some later period.

From this point we traced the rampart for some distance farther to the west, and found it growing more and more eroded and worn away, until at length it practically disappeared save for a few uncertain remains. Others, apparently better preserved, we could see far away across the river-plain; but these we had not the time to visit.

Before we leave our discussion of these earthworks, it will perhaps be of interest to touch briefly on the probable reason for their enormous and seemingly unnecessary thickness. For the tremendous additional labour and expense thus incurred can only have been undertaken for the sake of providing against some very real and compelling danger.

During the middle of the first millennium B.C. the arts of war and notably of siege-craft made great progress in China. Particularly was this true in regard to the use of mines. These were employed, then as later, for two purposes; the one, to gain direct access to the interiors of beleaguered towns, the other, to overthrow their ramparts and thus effect a practicable breach for a storming party. The latter aim the Chinese military engineers of that day did not achieve with the aid of explosives, then still unknown in China as elsewhere. Instead, they tunnelled beneath the earthen city-walls and there excavated a large chamber whose ceiling they supported by means of stout timbering; this they then set on fire, thus causing it to give way and allow the section of rampart immediately above it to drop into the cavity.

The earliest mention in Chinese literature of this proceeding, so far as I know, dates back to around the beginning of the fourth century

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B.C.¹¹ and the passage would imply that it had already then been known in China for some time, perhaps even as much as a century or two, although scarcely more than that. For prior to around the middle of the first millennium B.C. the methods employed by the Chinese in the capture of walled towns had been chiefly those of surprise, escalade, or blockade. As in the Occident (*e.g.* at Croton in 510 B.C. and at Mantinea in 385 B.C.), so in China also, rivers were sometimes diverted against city-walls and made to undermine them. It seems to have been slightly later (*i.e.*, after the middle of the same millennium) that in both China and the West there came into use the above-described method of breaching walls by mining. It was employed in the latter region, for instance, at the siege of Megalopolis by Polyperchon¹² in 318 B.C. and at that of Abydos by Philip V of Macedon in 200 B.C.

It is only fair to say, however, that the best military opinion in ancient China, such as that of Sun Tzū,¹³ was in general opposed to the investment of fortified places, preferring rather to bring about their surrender by overcoming the enemy's forces in the field.

In any event, against a rampart so massive and a moat so wide and deep as those which we saw at Old Ch'ang-an, even the most effective methods of siege-craft known to the ancient Chinese must have been well-nigh powerless. The capital of the Hans, though seated in a wide plain and so owing nothing of its strength to natural position, must have been as nearly impregnable to direct assault as was ancient Babylon.

The space inside the ramparts was, we found, a slightly undulating plain dotted with the mud hamlets of the local peasantry and with clusters of small modern grave-mounds shaded by trees; but for by far the greater part under intensive cultivation. As we might expect in a city occupied for so long a period (in all about two hundred years) as was Old Ch'ang-an, the present surface of the site, within the walls, was on the whole distinctly higher by several feet than was the surrounding country. Accumulations of downwash from the inner slopes of the earthen walls have no doubt been responsible for some of this rise in level; but much—probably most—of it was certainly the direct result of long continued human occupation. Similarly the level of the area inside the walls of Peking, inhabited continuously for a period

¹¹ *Mo-tzū*, chap. XIV, par. 62.

¹² Formerly miscalled 'Polysperchon'.

¹³ Also called Sun Wu; *fl.* 4th century B.C. On his writings see Lionel Giles: *Sun Tzū on the Art of War*, London, 1910 (trans. from the Chinese, with notes).

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roughly three times as long as was Old Ch'ang-an, is today in many places from 20 to 30 feet higher than it was originally.

Immediately west of the city proper and separated from it by the much eroded remains of two parallel earthen walls of no great size which ran north and south about a hundred feet apart, we came upon the old palace-enclosure of the Han emperors. The surface here also was somewhat undulating in character. Some of the slight irregularities in level made us wonder whether they might not conceal the remains of ancient buildings ; for the records speak of a number of palaces. The

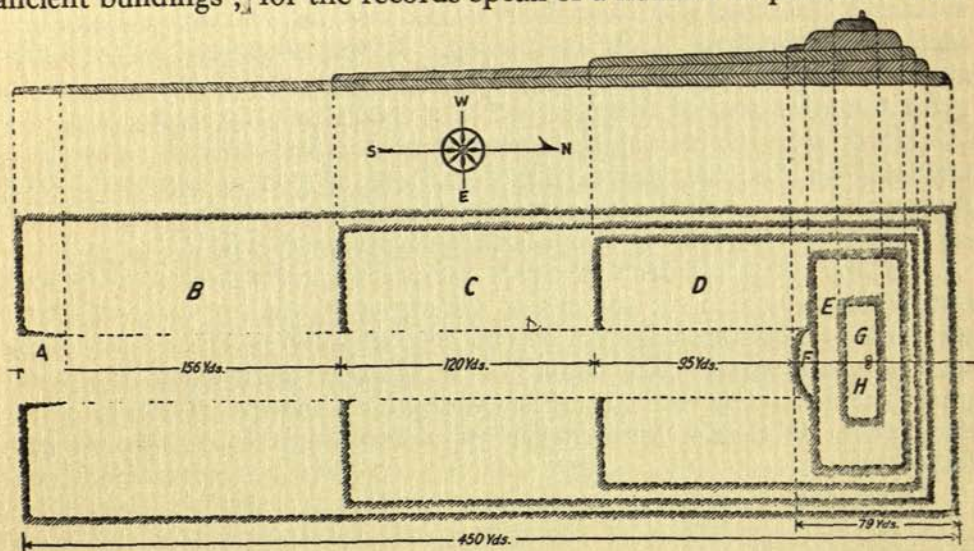


FIG. 2. PLAN AND ELEVATION OF WEI YANG KUNG PALACE FOUNDATION-MOUND, OLD CH'ANG-AN

ground here, however, just as in the city proper, had been so long and so continuously under the plough that all surface indications had disappeared, except at one point.

Here, some hundreds of yards ahead of us, a little to the south of west, we saw a long mound in several superimposed stages, with its major axis extending due north and south and perhaps coinciding with that of the palace-city itself. This mound, our Chinese companions told us, had been the foundation-platform of the principal edifice in the old palace complex, the celebrated Wei Yang Kung already mentioned (for its plan and elevation see FIG. 2).

We found the ground-plan of this interesting construction that of

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a long rectangle, with corners surprisingly well-defined considering its age. The total length was 450 yards, its breadth 145 yards, and it was built in five stages, of which the highest, near the northern end, rose some 50 feet above the surrounding fields. It had been constructed of successive layers of *terre pisé* like those forming the rampart that we had just been examining, and was now thinly covered with grass save for patches of cultivation here and there, and for a few great stones of which we shall speak in a moment.

Exactly at the centre of the southern end of the rectangle we found traces of an approach or gradual ascent of some kind, apparently a ramp (marked A on the accompanying plan, FIG. 2), about 100 feet in width east by west. It extended north, sloping gently upward the while, for some 70 feet, to the level of the top of the lowest terrace (B on the plan). The surface of the latter, aside from the ramp, was practically level and extended for 156 yards until it came to the second stage (C), marked by a sharp rise or step of 2 feet. From this point north, a slight upwards slope brought us to another abrupt rise of 2 feet marking the beginning of the third terrace (D). The ground thence continued rising gently until, 95 yards still farther north, it reached the edge of the fourth stage (E). This was a steep earthen bank some 10 feet high; from its southern face there projected a somewhat lower platform of earth (F), now much eroded but apparently once rectangular in form; its ends were in exact alignment with the borders of the (unpaved) avenue of approach, which we had been able to trace, intermittently, up to this point.

The mound culminated in a long narrow terrace (G) about 12 yards wide north and south and extending east by west for some 65 yards; its fairly level top stood about 6 feet higher than the preceding stage. Here, at the apex of the mound, was a commemorative stela encased in brickwork (H), erected in the year 1695 at the behest of the great Manchu emperor commonly called by Europeans K'ang-hsi.

The rearward or northern end of the mound descended to the level of the fields about it in a series of unequal and now much eroded stages—the borders of the successive terraces just described. These however projected far less beyond one another here than they did on the south; the total distance from the centre of the uppermost stage to the northern edge of the lowest amounted only to some 50 yards, as against about 400 yards in the opposite direction.

Scattered here and there over the surface of the great rectangle were several large water-worn boulders, already mentioned (these I

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have not indicated on the plan (FIG. 2), as we were too straitened for time to determine their positions even approximately). These were not grouped or arranged in any regular order. They rested directly on the tamped earth of the mound at varying heights above ground-level, and could only have reached their present position through human agency. According to the surmise of our Chinese companions, they may have been ornaments in some garden or pleasure within the ancient palace. It seemed clear at all events that they had not fulfilled any structural purpose.

The Wei Yang Kung mound as we saw it, even in its present state of nakedness and desolation, possessed a certain aspect of dignity and proportion and balance. Rising out of a level plain, and covered as it was during Han times by stately buildings (probably with painted or lacquered columns and brightly coloured roofs of tile),¹⁴ it must have presented a most inspiring spectacle to all who beheld it—to the native subjects of the Son of Heaven themselves as well as to the visitors from many lands, some of them in the distant West, who we know thronged the capital city of the Hans.

In China the walls of cities have retained their usefulness as in perhaps no other country. An instance of this occurred a few years ago, during a civil war. The attacking force attempted to use poison gas; whereupon their opponents retired inside a walled town, closed its gates, and found themselves quite safe. City walls have been placed in repair (although probably not constructed *de novo*) in China in very recent times. The study of their development there through so long a period is therefore particularly instructive.

The earthworks at Old Ch'ang-an, dating as they do from an epoch when China's Bronze Age had only comparatively recently become one of Iron, are especially worthy of study. During the few hours that we were able to spend there, we saw enough to convince us that systematic and extended excavation would beyond doubt yield results of very great interest. Moreover the nature of the site was such as to lend itself particularly well to survey by aeroplane. Vertical air-photographs of its varied features would be of especial value and would be almost certain to reveal details which had escaped our notice on the ground.

¹⁴ Roofing-tiles of baked clay seem to have come into use in China during the Eastern Chou period (770-255 B.C.). By Han times, from around 200 B.C. onward, those used to cover important buildings had begun to be painted in bright hues. It was not until the epoch of the Six Dynasties, well after the commencement of our era, that the practice arose of covering them with coloured glazes.

Notes and News

TIN-DEPOSITS IN THE NEAR EAST

Tin is of interest to archaeologists because, alloyed with copper (the earliest known metal) it forms bronze, the material normally used for implements and weapons before the discovery of iron. Natural deposits of tin are rare ; not more than about half a dozen regions must have supplied the whole of the ancient world. The use of bronze in any region where tin does not occur naturally implies traffic with such a region.

The time and place where metal was discovered and first used is still uncertain ; but it was probably somewhere in the mountain region to the north or northeast of Mesopotamia. The earliest known metal objects were of copper ; but bronze makes its appearance at an early date. Nothing certain is known of the source from which these early metallurgists obtained their tin. The nearest well authenticated natural deposits are situated 2000 miles and more to the west ; and it is most unlikely that these were the first to be worked. On the other hand there are persistent statements that tin occurs naturally in the mountainous hinterland of Mesopotamia, where copper deposits are also found and where the alloy and its superiority (in hardness) to pure copper might well have been discovered accidentally. Many years ago, before the war, I collected some notes on this subject, with the intention (never carried out) of writing it up some day. That is not possible without access to a good library and map-collection, and since then neither the opportunity nor the necessary leisure have been available. It seems desirable however that the references should be published, so that others may perhaps follow them up. In so doing I apologize for their incompleteness and the fact that there are no references to anything published since about 1910 when they were first amassed. At the time the books referred to were all consulted, but it is possible that some of the clues are false. When all is said and done, however, there does seem to be a very strong probability that natural tin-deposits, probably the earliest ones known, occur in the mountains of Armenia, Kurdistan or Iran.

The fullest and most circumstantial account concerns the alleged tin-deposits of Khorassan. It consists of a posthumous note by von Baer published in *Archiv für Anthropologie*, vol. ix, and quoted in

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Matériaux, XII, 138-9, from which the passage below has been translated. The information was obtained by von Baer from a friend of Monsieur de Semenov, the Vice-President of the (Russian?) Geographical Society, whose name was Ogorodnikow. He says: 'Aga Kasym Ragiin, an inhabitant of the town of Meshed (lat. $36^{\circ} 15' N$, long. $59^{\circ} 35' E$) and lessee of several copper-mines in Khorassan, told me that at a distance of 1.20 farsangs (7 versts) from the town of Utschan-Mion-Abos occur the richest mines of tin, iron, copper, sulphur and lead; and that at 2.6 farsangs from Meshed is a tin-mine called Rabodje Alokaband. The accuracy of this information was confirmed by Hadschi Ibrahim of Bokhara, who knows the region, and a large number of people who work in the mines. Moreover, the fact that tin is a product of the region is proved by the abundance of large vessels (brocs) and plates of this metal which are found in all the houses and which are regarded as very old and manufactured from local tin. On the other hand, merchants having commercial relations with Merv know that the mountainous districts of Turkmenistan (Turthmenie, *sic*), inhabited by the tribe of Teke, abound in minerals, amongst which tin is mentioned'.

It seems difficult to believe that there is not something behind this very circumstantial account. Since it was published, however, it has been neither confirmed nor supplemented by any subsequent traveller. A letter addressed by the present writer to the British Legation in Tehran, which was followed by local enquiries, produced merely negative results.¹

The following other references to Tin may be added:—

ANGERT.

A deposit of tin associated with iron pyrites and copper at Angert, east of Alikhan Dag. Petermanns *Mitteilungen*, 1904, 235; R. Wilbraham, *Travels in the Transcaucasian provinces*, 1838, 71; C. C. A. Grewingk, *Geogn. und Orogr. Verh. des N. Persien*, 1853, 68. *Vendidad-Sade*: book of Zoroaster (quoted by Lenormant in *Arch. Préh.* 1873[?], 131).

TILLEK.

'In the vicinity [of Tillek and Surp Carabet] there are some very rich copper and tin mines, and immediately above a large rock composed of loose pieces of an intensely black stone heavier than lead, but shining

¹ I take this opportunity of thanking the British Legation authorities for their kindness in investigating this matter.

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like marble, which further on is streaked with delicate white veins'. J. G. Taylor's, *Journal of a Tour in Armenia, Kurdistan and Upper Mesopotamia*, with notes of researches in the Deyrsim Dagħ in 1866; *Journal of the Royal Geogr. Society* (London), 1868, xxxviii, 339.

ASTERABAD.

L. de Launay (*Les richesses minerales de l'Asie*, Paris, 1911) states that auriferous sand was washed out at Damghan on the Kouh-i-zar and that 'the same district of Asterabad appears to contain a little tin' (p. 661).² See also an article in *Rev. Arch.* 1882 on 'L'Orfèvrerie d'étain dans l'antiquité', describing some of the eastern sources of tin.

DRANGIANA.

Strabo (Ch. 724, Teubner edition, 1877, pp. 1009-10) says that the Drangai had tin (*γίνεται δὲ παρ' αὐτοῖς καπτίτερος*).

The presence of copper-deposits associated with those of tin in some of these places is of the first importance if the facts can only be authenticated. Perhaps some of our readers can help. A trip to Meshed would probably settle the matter once and for all, and provide an interesting motive for an unconventional holiday. O.G.S.C.

THE KISH GOAT, BULGARIA (PLATE I)

As I was motoring southwards from Sofia to the village of Zlokutchene in Bulgaria last September with a party of archaeological friends, I observed not far north of the village a herd of goats being pastured by the wayside. It was obvious that some of them had the crumpled horn characteristic of the Kish goat described by Professor Amschler in a recent number of *ANTIQUITY* (1937, xi, 226, plate v). It will be remembered that this is the same animal as the 'ram caught in a thicket' whose effigy, found in the grave of Queen Shub-Ad at Ur by Sir Leonard Woolley, is now exhibited in the British Museum; and that the horn of one was found at Kish by Mr Henry Field of the Field Museum, Chicago. I took some photographs and subsequently forwarded them to Mr Field, who sent them on to Professor Amschler. In his letter to me Professor Amschler confirms the identification, adding that the Bulgarian herd has probably been crossed with the old form (*Capra prisca*). 'The Mesopotamian type can be very well recognized on PLATE I. Here it is the goat on the left, whose head and horns are just visible, which corresponds exactly to that of *Capra*

² He also mentions on the same page the presence of auriferous quartz at Tarkobeh, west of Meshed, and of worked-out copper-mines at Fahr-Daud, near Boymichk.

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girgentana. Since the publication of my note I have studied the distribution of this very interesting goat-type, and have discovered that, outside Sicily, it is found in the islands of Crete and Malta, in Greece and southern Albania, and also, as you have now proved, in Bulgaria. I congratulate you on this extremely interesting observation'.

It is obviously too early to speculate upon the archaeological implications of this distribution, which may be expanded by future observations. I would merely suggest that readers of ANTIQUITY who travel on their holidays might keep a look out for goats with crumpled horns, and photograph them. Needless to say I shall be glad to forward any such photographs to Professor Amschler; and may I add that, for purposes of identification, *enlarged* prints (not contacts) are most desirable?

We are merely at the threshold of the fascinating new subject of 'animal ethnology', which may eventually throw as much light upon the diffusion of culture as does the study of human antiquity. The starting-point is, of course, the preservation and specialist description of animal bones obtained by excavation from ancient sites. Nowadays this is a normal procedure on all properly conducted expeditions. Such work provides the zoologist with essential facts for the study of the evolution of breeds and species.

O.G.S.C.

PREHISTORIC ORGANIC REMAINS*

The time has come to abandon the notion, still widely held, that all organic matter decomposes into refuse and ash immediately it is buried underground, since investigations in many places have already succeeded in revealing quite considerable prehistoric organic remains in the soil; besides charcoal, such materials have been found as fabrics, leather, resins, and recently food remains and even whole plants. Heer broke the spell by his classical researches in the pile-dwelling village at Robenhausen. Since then many later investigators, such as Netolitzky of Cernauti, Newueiler of Zurich, E. Hofmann of Vienna, and Bertsch of Ravensburg amongst others, following in Heer's footsteps, have supplied numerous important contributions to the solution of the problem, particularly with regard to the prehistoric flora of the Alpine lake dwellings. It is true that the soil conditions in the marshy ground of these silted-up and silting-up Alpine lakes, as also the peat bogs of northern Middle Europe, are exceedingly favourable to the preservation

* Translated by J. F. S. Stone.

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of organic remains. Because this was known, indeed was held as an ideal state, it persisted for a long time until other soils had been investigated. The first attempt was not very encouraging. Not until one began to study systematically the decomposition phenomena of organic fragments was a successful advance possible.

These investigations on soil chemistry yielded first of all the surprising fact that the marshes in which the occupation layers lie are subject to conditions entirely different from those of the bogs of the north German lowlands, Jutland, and Scandinavia. In the Alpine lakes and in their silted-up zones both the water and the soil are alkaline on account of the lake chalk present, whereas in the north the bogs are acid almost throughout. This observation leads at once to the rejection of an old and well worn opinion. One is still able to read in almost the whole pertinent literature that the Neolithic and Bronze Age inhabitants of the pile-dwellings were acquainted with linen only, from which they made their clothing and fashioned their nets ; in contrast thereto that the northerners had wool only at their disposal and, therefore, that woollen garments only were worn, which have certainly been preserved for us in unusual magnificence in Bronze Age wooden coffins. In reality, however, wool is soluble in alkalies and must dissolve therefore in the chalk and in the moisture lying over it, whereas linen remains preserved if shut off from oxygen and bacteria. It is otherwise in the north. There the imbedding material is acid, and is in fact bactericidal in the greater depths of the bogs. Wool must therefore at all events remain preserved ; but flax, and cellulose in general, disappears if the acid has not attained a strength harmful to bacteria. In investigations in progress in the north linen has indeed been looked for and has actually been found.

Accordingly, within the compass of these inquiries, it appears to be established that the statement to be found in almost every book that the preservation of the northern wooden coffins of the Bronze Age may be traced to the action of the tannic acid in the oak trunks used, is absurd. Of the innumerable wooden coffins, whose presence has become known to us through excavations, only those remain preserved which have lain in soil bounded by stones, so that the water in the barrows cannot drain away but is obliged to stagnate and thereby become acid.

In order to pursue the investigations it was necessary to establish the chemistry of the acids present in the northern bogs. This indeed presented great difficulty. The result was that it was found to be a question of the *humic acids* ; and not of a single chemical compound,

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but of whole groups which did not even react uniformly. The investigations are as yet far from complete. At this point geology and the chemistry of prehistoric remains meet and work is being carried on from both sides towards a solution of the problem. At the present day the following appears to be clear: the humic acids are auto-oxidizable and pass over automatically into the more highly oxidized state up to the point where they have transformed the substrate, which they have attacked, into carbon with the retention of the original form of the latter. An example from prehistory may be used to illustrate this: the prehistoric farmer kept his cereals underground, which is clearly an unsuitable place for such materials because in this position they certainly meet conditions suitable for germination. If it did not germinate it must have become musty under the influence of bacteria. The prehistoric farmer protected himself from both of these harmful natural processes by roasting the cereals before storage, which means that he put around each grain a layer of humic acid. This layer, which was only weakly attached to the grain some thousands of years ago, eats its way in further in the course of time and would undergo oxidation; when we find the cereal today it is mostly by this time carbon in the form of cereal grains.

Now highly oxidized humic acids have the one advantage that they dissolve in alkalies. This we turn to useful purpose, and in fact, if an organic find from the plant world has not yet reached these higher states of humic acid, we oxidize it further in a bath of nitric acid and potassium chlorate. The results are always so good that a microscopic examination of the residue is not impeded, and is often even so favourable that after washing away the colloiddally dissolved humins in alkali it is still possible to conduct colour reactions as with recent material.

Only in the highest stages of oxidation, that is to say with carbonized cellulose and with lignin, is potash no longer usable; precisely since all has been converted into humic acid. After great trouble a successful method of attack has now been found. We imbed the object to be examined in a mixture of Gum Damar and Canada Balsam, cast it in Plaster of Paris, and cut a section from it by grinding. The ground surface is thereupon photographed under the microscope, using infrared plates, with surprising results.

In the discussion of the humic acids in prehistoric cereal grains a further important advance in the chemistry of prehistoric substances is really indicated. It has been possible in fact to identify the acid, found originally in the northern bogs, in *all* soils of an acid character. We

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are so far advanced today that *no* prehistoric potsherd that has been found in a soil possessing a Ph value below 6 is brought immediately to the laboratory for cleaning. It is rather first examined carefully for food remains by means of a magnifying glass.

Naturally conditions for preservation are never so favourable in ordinary soils as in bogs, and it is only with the help of microchemistry and the microscope, with infra-red plates and luminescence analysis in filtered ultra-violet light, that it is still possible to make the organic objects, in so far as they are of plant origin, yield the required information.

It is more difficult to trace organic remains of animal origin. For this purpose the excavator must send in not only the contents of the pot itself, but also samples of earth from the culture layer and from the corresponding soil layer. In the laboratory a so-called blank test is then made on both of the last, which means that the soil samples are examined in the most accurate quantitative manner for iron, phosphate, nitrite, nitrate, ammonia, calcium, and amino-acids. Only then does the sample of the contents of the pot undergo similar treatment. From the various values so obtained conclusions may be drawn. Nevertheless these would often be very vague were it not that acid soil (so long as it is not pure sand) possesses the property of absorbing all fats, of plant as well as of animal origin. It is true that it is no longer the fat that it was during the prehistoric period. The alcohols have long ago disappeared and only the fatty acids remain preserved. These are removed from the earth by means of alkali, the filtrate acidified with sulphuric acid in a separating funnel, and extracted with petroleum ether. If the yield is large enough we esterify the acids by the Täufer method and after this process fractionally distil them. If this is not possible cholesterol or phytosterol is crystallized out in order to obtain a clue as to whether it was an animal or a vegetable fat. In addition the molecular weight of the fatty acid mixture so obtained—for only as such can it be treated—is estimated by titration with decinormal alkali; and the micro-melting point determined by the method of Kofler. Also the remaining constants, saponification number, ester number, and iodine number are recorded, although at the present time not much has yet been attempted with these three values. In connexion with the Ph value of the soils these constants will, however, at some future date yield important indications, although that is a question which only time and numerous investigations can settle. That the iodine number is often surprisingly small need not surprise us. It is self-evident that

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all unsaturated acids will long ago have split at the double bonds and become hydroxy-acids. The iodine number of a specimen, definitely shown to be linseed oil of the Viking period, yielded for instance a value of 74 as against the normal figure of 185 to 220.

Scientific prehistoric research is still young, but it presses on step by step so that, especially in Germany, there is scarcely a major excavation undertaken in which the microscope and the test tube do not stand in the same degree of importance as the spade, and have brought to light results which a few years ago would have been deemed impossible.

WALTER VON STOKAR.

CHINESE SOCKETED CELTS (PLATE II)

In ANTIQUITY for March 1937, discussing the period at which the socketed celt entered China, I suggested that the date was the sixth or seventh century B.C. It is the purpose of this note to point out that the actual date was several hundred years earlier, *i.e.* in the 12th or 11th century B.C., at that period of bronze decoration to which Professor Yetts has applied the term 'First Phase'. In other words, there is now evidence that the socketed celt existed in China towards the end of the Shang-Yin dynasty.¹ I am indebted to a number of colleagues for drawing my attention to this fact, particularly to Mr O. Karlbeck and Dr F. Bergman of Stockholm and to Bishop White of Toronto.

Some years ago, when in China, Mr Karlbeck obtained for me the massive, rather coarsely ornamented socketed celt shown in PLATE II. I tended to look upon this as a clumsy archaism, and it was only when I heard from Mr Karlbeck that he had no doubt that it came from An Yang, the royal burgh of the later part of the Shang-Yin dynasty, while Bishop White independently expressed the same opinion on its appearance, that I began to realize its value as evidence. Any doubts that I may have had with regard to the age were dissipated by the raised pattern on the celt, consisting of three elements or characters: (1) a tortoise; (2) an upright with a basket-like head, such a basket as is made by splitting the top of a pole into four, forcing the split ends apart, and keeping them in position by bark or fibre passed round them; (3) a snake, depicted s-wise across the upright. These three elements, combined in slightly different manners, occur on a number of bronzes belonging to Professor Yetts' 'First Phase' of bronze decoration, which

¹ The date of the Shang-Yin dynasty, traditionally 1765-1123 B.C., is uncertain; another system of dating gives 1558-1051 B.C.

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ended in the 10th century B.C. Some variants of this combination are shown in the plate, and I take this opportunity of thanking my friend, Mr Arthur Waley, for his help in discovering examples as well as for assistance with regard to the meaning of the characters.

The first example found by Mr Waley is on each of three goblets (*chio*) decorated in First Phase style, reproduced by Liu T'i-chih in his big collection of rubbings recently published. His next discovery was in the *Yeh-chung P'ien-yü*, an album of photographs of objects found at An Yang with a preface dated 1934. In this is reproduced (vol. I, fol. 10 and 11) a tripod (*ting*) of the First Phase, bearing the triple sign reproduced on PLATE II. It is more remarkable that this publication reproduces a celt (vol. II, fol. 11) obviously cast from the same mould as that in my possession, and that careful comparison of the distribution of the patina compelled Mr Waley and myself to recognize that the celt figured in the Chinese publication and my example were one and the same specimen. I had previously recognized the triple sign cast on the bottom of a sacrificial vessel (*kuei*) of my own, said to come from An Yang, and Mr Karlbeck has figured the same sign on the upper part of a bronze beaker (*ku*) from An Yang now in the Museum of Far Eastern Antiquities, Stockholm.²

The triple sign thus occurs on a number of bronzes of An Yang provenance and does not appear to be known on bronzes from sites of other date. There cannot, I think, be any doubt as to the Shang-Yin origin of the specimen here illustrated, the remaining matter of interest being the significance of the triple sign. Mr Waley informs me that Liu T'i-chih's interpretation is 'younger brother Kuei' ('Tortoise'), i.e. the name of an ancestor of a 'cadet' branch. This rendering neglects the 'basket' element, which is so obviously part of the pictogram, but in the present stage of our knowledge it does not seem possible to go further without being unduly speculative. I will only add that Professor Yetts informs me that other instances are known of weapons and tools being inscribed in the same form as ritual vessels. Actually these from the archaeological standpoint are side issues, the importance of the specimen cited being that it appears to prove the existence of the socketed celt in China in Shang-Yin times.

C. G. SELIGMAN.

² 'Notes on the Archaeology of China', in *Bulletin No. 2 of the Museum of Far Eastern Antiquities*, (Stockholm, 1930) pl. II.

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CAP-BLANC ROCK SHELTER¹ (PLATE III)

Through the kindness of the Abbé Breuil three photographs, formerly in the collection of the late Dr Louis Capitan, have been presented to Field Museum. These photographs were taken in 1911 at Cap-Blanc in the Dordogne district of France on the day of the discovery of the important Magdalenian skeleton, which has a prominent position in the Magdalenian section of the Hall of the Stone Age of the Old World in Field Museum of Natural History, Chicago.

Following the careful excavation of the skeleton, it was sent to Professor Marcellin Boule in Paris. In 1916 M. Grimaud, having made no money out of the discoveries on his property, decided to reclaim his anticipated profit, and during the stress of war conditions was able to ship the skeleton to New York, where he demanded a fabulous sum for it.

Ten years later Field Museum had word that the original Cap-Blanc skeleton was still in New York and had not yet been purchased from M. Grimaud. An offer by the Director of Field Museum was accepted and shortly afterward the Magdalenian skeleton was shipped to Chicago.²

During 1932 the skeleton was withdrawn from exhibition in order that the skull might be restored by T. Ito under the direction of Dr Gerhardt von Bonin (of the Department of Anatomy at the University of Illinois in Chicago) who was invited to prepare a report³ on the skeleton, extracts from which follow:—

When the skeleton arrived at the Museum, it was in an almost perfectly clean condition, only a few bones being still embedded in a matrix of somewhat gritty, loam-like matter. The long bones were almost all perfectly preserved. The pelvic and the shoulder girdle were somewhat damaged, particularly in the pubic region and the scapula.

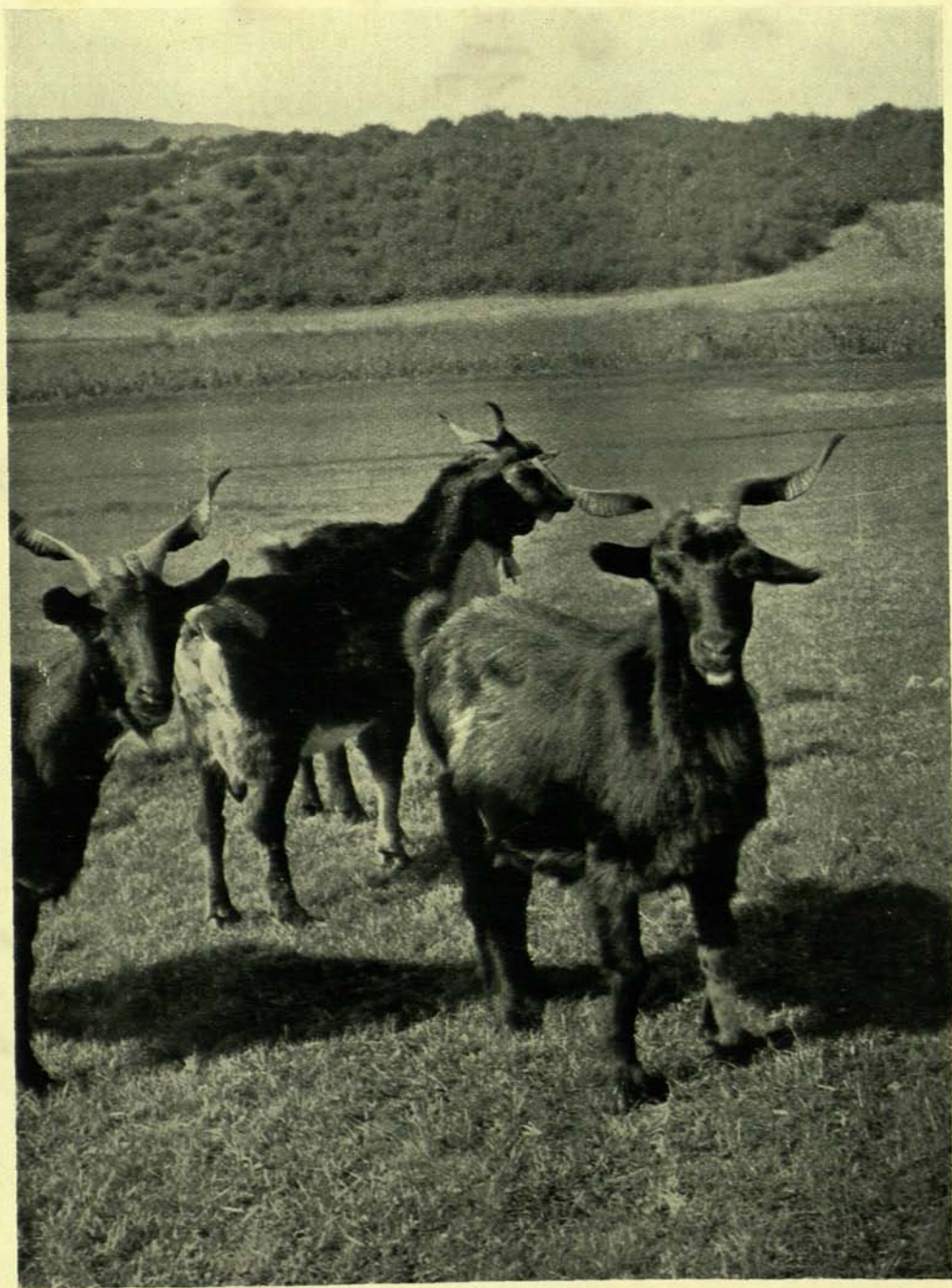
The vertebral column appeared to be complete, the vertebrae were for the most part still held together by adhering soil. Twelve left and ten right ribs were found, and a rather decayed square

¹ See J. Lalanne and H. Breuil, 'L'abri sculpté de Cap-Blanc à Laussel (Dordogne)'. *L'Anthropologie*, xxii, p. 385.

² Henry Field, *The Early History of Man with special reference to the Cap-Blanc skeleton*. Field Mus. Nat. Hist. Anthr. leaflet no. 26, Chicago, 1927.

³ Gerhardt von Bonin. 'The Magdalenian Skeleton from Cap-Blanc in Field Museum of Natural History'. *Illinois Medical and Dental Monographs*, vol. 1, no. 1, University of Illinois, Urbana, 1935.

PLATE I



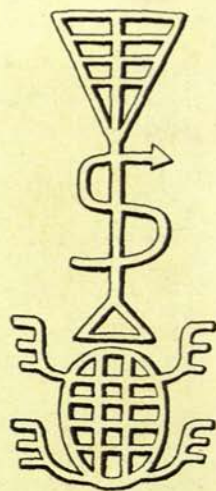
GOATS NEAR SOFIA, BULGARIA (see p. 82)
ph. O. G. S. Crawford

PLATE II

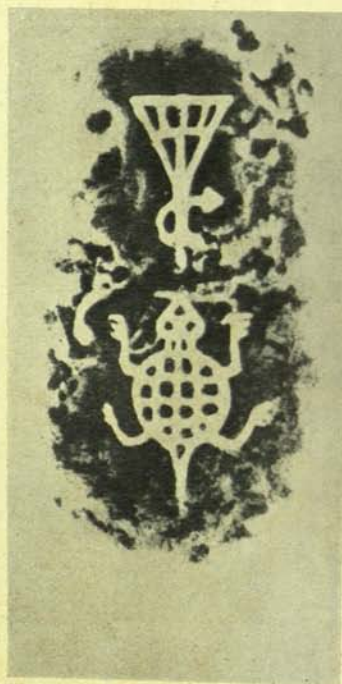


FRONT AND SIDE VIEW OF SOCKETED CELT, BEARING TORTOISE, SNAKE
AND BASKET SIGN (1)

(see p. 86)



DIAGRAMMATIC RENDERING OF
TRIPLE SIGN ON KUEI, SAID TO
COME FROM AN YANG



RUBBING OF TRIPLE SIGN ON BRONZE
TRIFOD (YEH-CHUNG P'YEN-YÜ)

PLATE III



CAP-BLANC SHELTER WITH MAGDALENIAN SKELETON ON LEFT (see p. 89). (M. Grimaud in foreground)
ph. L. Capitan

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piece of bone, apparently all that was left from the manubrium sterni. The cervical column was firmly attached to the lower jaw and a part of the upper jaw. The skull was broken into a number of fragments. The bones are of a brownish color, darker in some spots and lighter in others. They are firm enough to be handled conveniently, yet somewhat brittle. In some spots, dental cement had been put on the bones in order to prevent them from crumbling. This has obscured but few morphological details.

The general conclusions are that the Cap-Blanc skeleton belonged to a young woman about 156 cm. in stature and approximately twenty years of age.

In the exhibition case adjoining that of the skeleton is a life-size diorama of the Cap-Blanc rock shelter,⁴ a reproduction modelled by Frederick Blaschke.

The Cap-Blanc girl, the only complete European palaeolithic skeleton on exhibition in a museum on the American continent, has attracted the attention of several million visitors during the past decade.

HENRY FIELD.

THE GREAT THEATRE, BYZANTIUM* (PLAN, p. 91)

The topographical works available to the student of Constantinople deal mainly with Byzantine architectural remains, and the older Greco-Roman foundations of the city have been almost entirely neglected. But when studying the topography of the city one is forced to consider the pre-Byzantine period. References to temples, theatres and palaces of the pre-Constantinian period can be found in many works, and with further research it should be possible to locate the position of these buildings. Without excavation it is almost impossible to decide upon the position of the temples, as those which stood upon more or less level ground are buried deep beneath accumulations of rubbish, or are built over. The location of the Greek Theatre is simplified by the fact that such buildings were almost always constructed on a steep slope on which the tiers of seats were built. The first question therefore is, can the theatre be located by the help of literary sources?

⁴ For more detailed description and photographs see: Henry Field, *Prehistoric Man*. Anthr. Leaflet no. 31, 3rd edition, Field Mus. Nat. Hist., Chicago, 1937.

* Translated by Mr I. Bell.

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1. DESCRIPTIO XIV REGIONUM¹

Prima Regio, longa situm, plana in angustum, a Palatii inferiori parte contra Theatrum majus euntibus, dextro latere declivis in mare descendit.

This quotation indicates that the Great Theatre lies on the boundaries of the first region. The road to the theatre is described as running along a narrowing plateau which falls away sharply to the sea on the right. As the theatre is not included by the writer in his description of existing buildings,² it must be assumed that at that date it was only a ruin. To traverse the whole length of the Acropolis Hill, one must approach it from the southwest and walk towards the northeast. Then the steep declivity to the sea lies on one's right, and, according to the text, the theatre would lie before one.

2. CHRONICON PASCHALE³

Καὶ (Σεβήρος) ἔκτισεν ἀντ' αὐτοῦ ἐν τῇ ἀκροπόλει τῆς αὐτῆς Βύζου πόλεως ναὸν ἦτοι ἱερὸν Ἀπόλλωνος . . . κτίσας ὁ αὐτὸς βασιλεὺς κατέναντι τοῦ ἱεροῦ τῆς Ἀρτέμιδος, κυνήγιον μέγα πάνυ, καὶ κατέναντι τοῦ ἱεροῦ τῆς Ἀφροδίτης θέατρον.

Here the theatre is mentioned as opposite the Temple of Aphrodite. The Temple of Aphrodite on the Acropolis is mentioned twice by Malalas.⁴

3. SUIDAS, LEXICON⁵

ὅτι Σεβήρος ἤκεν εἰς τὸ Βυζάντιον . . . ἐφείσατο μὲν τοῦ φονεῦν, Περινθίοις δὲ καὶ αὖθις ὑπέταξε, καὶ παρέσχεν αὐτοῖς θέατρον καὶ κυνήγιον στοάς.

The theatre is mentioned together with the Kynegion, from which one may conclude that the buildings lay close together. The Chronicon Paschale also mentions the Kynegion and the theatre in the same sentence.⁶

It is clear from these texts that the so-called Great Theatre lay on the Acropolis. The theatre was near the Temple of Aphrodite, and possibly close to the Kynegion. It was not on the southwest of the hill, but nearer the summit, to the northeast.

¹ Du Cange, Constantinopolis Christiana, liber II, § 1.

² Unless, through some mistake, this building and the Theatrum Minus of the second Region are the same.

³ Bonn edition, 1832, p. 495.

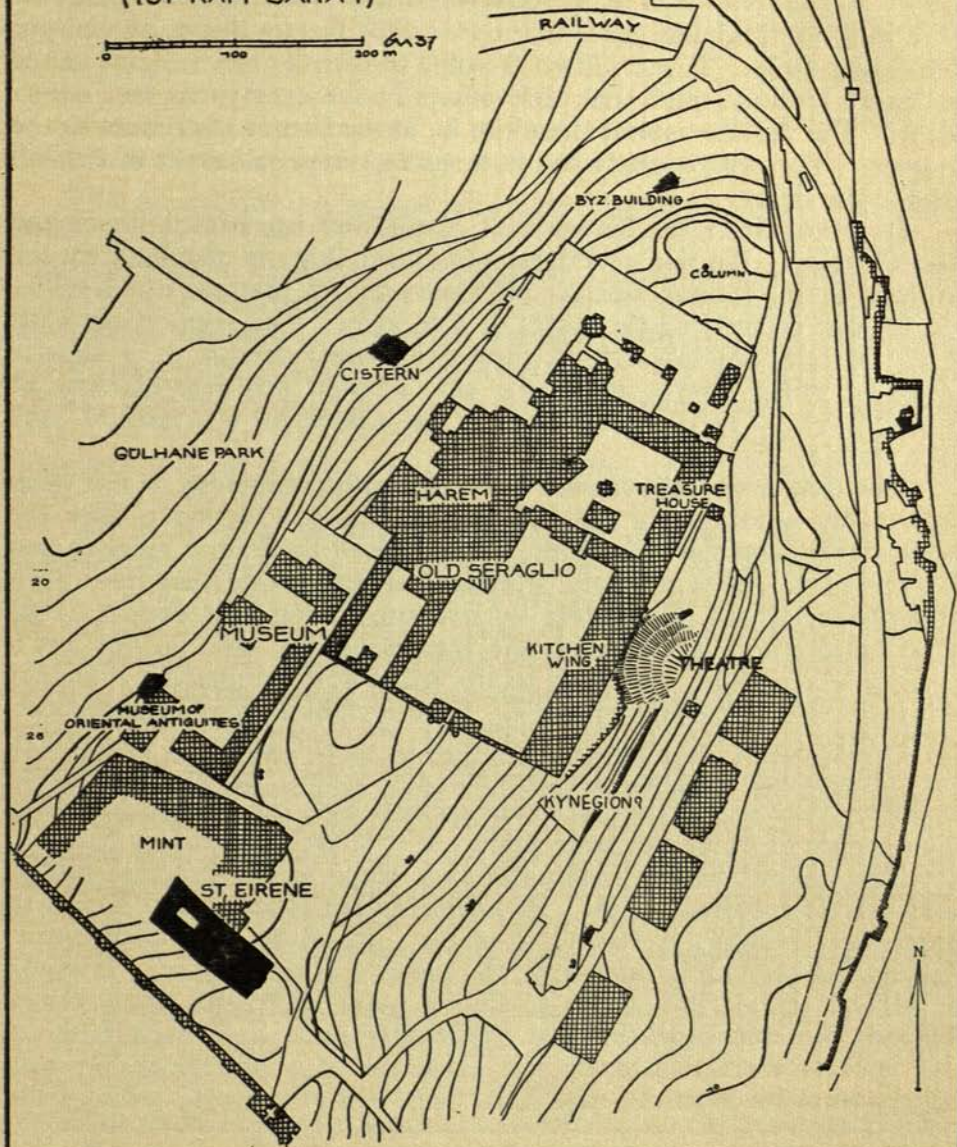
⁴ Bonn edition, 1831, pp. 324 and 345.

⁵ Ed. Bekker, Berlin, 1854, p. 940, col. 2; p. 941.

⁶ F. W. Unger, *Quellen der byzant. Kunstgeschichte*, Vienna 1878, p. 60, no. 779.

THE ACROPOLIS HILL AT BYZANTIUM (TOP KAPI SARAY)

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ANTIQUITY

TOPOGRAPHY OF THE ACROPOLIS HILL

The Acropolis of ancient Byzantium is today the fortress hill Top Kapı Saray (Old Seraglio), which was laid out and built over mainly during the 15th and 16th centuries. To provide space for these buildings, the hill was enlarged towards the southeast by massive supporting walls. It will not be possible to identify the temples inside the Saray grounds until trial excavations in the courtyards are undertaken. The theatre cannot therefore be located from references to the temples. The only course open is to study the peculiarities of the hill outside the Saray.

In recent times the Museum of Antiquities has been built on the western slope. To the northwest the entire slope is occupied by the Gülhane Park. On this side the hill shows no indentations which might justify us in identifying the traces of a theatre. The supporting walls of the Harem buildings stand throughout their length at a regular height of thirty metres above the sea, without any irregularities of ground level. The northeast slope is too narrow for a theatre to have been situated there.

The only area that remains to be examined, therefore, is the steep slope to the southeast of the hill. For a distance of 300 metres the hill is crowned on this side by the great walls of the Palace Kitchen and the Treasury. Because of the steepness of the ground they have been strengthened about the middle by five supporting buttresses.⁷ If we stand below these walls facing the buttresses, we have on our left a peculiar terrace built obliquely to the main wall, supporting that part of it which forms the kitchen wing. On our right there is a corresponding undulation of the ground. In front of us and between these there is a semicircular hollow. On the left and below the terrace referred to, a Byzantine supporting wall runs parallel with the kitchen buildings at a distance of 25 metres from them : it is interrupted at this hollow.

The hollow, which breaks the even slope of the Fortress hill, is obviously of artificial origin. Its visible extent is about 100 metres in length, and perhaps 50 metres in width. Its shape leads to the conclusion that beneath its surface lie the remains of the theatre. It would be difficult in all Byzantium to find a more likely site for a Greek Theatre, and the suspicion that the theatre must have been built on this spot is strengthened by the existence of a pre-Byzantine wall which, from its position, may have been one of the side-walls of the

⁷ Owing to reduction, the buttresses marked on the plan are not very clear.

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tiers of seats on the northeast side of the theatre. Comparison with the Greek theatres of western Asia Minor leads to the surprising observation that the Theatre of Pergamon is almost exactly the same in size.

In conclusion, it may with some reason be claimed that the study of the topography of the district points to this hollow as the site of the theatre referred to in the texts quoted above; but these theoretical observations cannot be verified except by the work of pick and shovel.

GÜNTER MARTINY.

MEGALITHIC COMPLEXES, TRANSJORDAN

The megalithic tower-complexes of Transjordan (see *ANTIQUITY* 1929, III, 342-4) are of interest not only in themselves but also because they have been compared with similar structures elsewhere. As a result of his recent exploratory tour the Director of the American School of Oriental Research in Jerusalem, Professor Nelson Glueck (in *BASOR*, no. 68, December 1937, 18-20) concludes that 'the *main* period of their history, to judge from the pottery remains, seems to be between the early 13th and the 8th-7th centuries B.C.'. It would thus appear that they may well be in part contemporary with similar structures at the other end of the Mediterranean.

We hope that investigators will not overlook the possibility, suggested by Dr Glueck, of finding ancient field-walls associated with them. That should be easy if they are found where later cultivation has not destroyed such vestiges; although near Amman itself one has the impression that the *existing* field walls and lynchets, which are very massive, are themselves of a remote antiquity and perhaps contemporary with the towers. (After all, assuming that fields were in existence, why should later cultivators destroy them? The labour of such destructive work would have been great and unremunerative, as we suggested in the case of the Cornish field-walls). It would be well worth while digging a trench through one of the ruined field-walls or lynchets, near the Amman tower for instance, to determine its age. Dr Glueck himself mentions some 'strongly terraced' slopes near Shūnet Abū'Arabī.

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* *Wissenschaftl. Veröffentl. d. Deutsch-Türkischen Denkmalschutz Kommandos*, Heft 1, Berlin, 1920: Sinai. (No other volumes were published).

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TOPOGRAPHY OF THE ACROPOLIS HILL

The Acropolis of ancient Byzantium is today the fortress hill Top Kapı Saray (Old Seraglio), which was laid out and built over mainly during the 15th and 16th centuries. To provide space for these buildings, the hill was enlarged towards the southeast by massive supporting walls. It will not be possible to identify the temples inside the Saray grounds until trial excavations in the courtyards are undertaken. The theatre cannot therefore be located from references to the temples. The only course open is to study the peculiarities of the hill outside the Saray.

In recent times the Museum of Antiquities has been built on the western slope. To the northwest the entire slope is occupied by the Gülhane Park. On this side the hill shows no indentations which might justify us in identifying the traces of a theatre. The supporting walls of the Harem buildings stand throughout their length at a regular height of thirty metres above the sea, without any irregularities of ground level. The northeast slope is too narrow for a theatre to have been situated there.

The only area that remains to be examined, therefore, is the steep slope to the southeast of the hill. For a distance of 300 metres the hill is crowned on this side by the great walls of the Palace Kitchen and the Treasury. Because of the steepness of the ground they have been strengthened about the middle by five supporting buttresses.⁷ If we stand below these walls facing the buttresses, we have on our left a peculiar terrace built obliquely to the main wall, supporting that part of it which forms the kitchen wing. On our right there is a corresponding undulation of the ground. In front of us and between these there is a semicircular hollow. On the left and below the terrace referred to, a Byzantine supporting wall runs parallel with the kitchen buildings at a distance of 25 metres from them : it is interrupted at this hollow.

The hollow, which breaks the even slope of the Fortress hill, is obviously of artificial origin. Its visible extent is about 100 metres in length, and perhaps 50 metres in width. Its shape leads to the conclusion that beneath its surface lie the remains of the theatre. It would be difficult in all Byzantium to find a more likely site for a Greek Theatre, and the suspicion that the theatre must have been built on this spot is strengthened by the existence of a pre-Byzantine wall which, from its position, may have been one of the side-walls of the

⁷ Owing to reduction, the buttresses marked on the plan are not very clear.

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tiers of seats on the northeast side of the theatre. Comparison with the Greek theatres of western Asia Minor leads to the surprising observation that the Theatre of Pergamon is almost exactly the same in size.

In conclusion, it may with some reason be claimed that the study of the topography of the district points to this hollow as the site of the theatre referred to in the texts quoted above; but these theoretical observations cannot be verified except by the work of pick and shovel.

GÜNTER MARTINY.

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In the same number of *BASOR*, Professor Albright concludes, on archaeological evidence set forth, 'that the Song of Deborah dates from between Megiddo VII and VI, in round numbers cir. 1125 B.C.', a date already suggested by him over a year ago. The Israelite occupation of the Shephelah of Judah would have taken place about a century earlier.

EXCAVATIONS AT GARRANES, TEMPLEMARTIN, CO. CORK*

An excavation of a large ring-fort at Garranes, co. Cork, has yielded results which are not only interesting but of first-rate importance for Irish archaeology. The excavation, which lasted two months and on which about twenty workmen were employed was financed as part of the State Employment Schemes under the direction of the Office of Public Works and the National Museum. It was conducted by Dr Seán P. Ó Ríordáin, Professor of Archaeology at University College, Cork, assisted by Mr M. J. O'Kelly and was carried out with the kind permission of the landowner, Mrs M. Crowley.

The site investigated is a very large ring-fort with triple ramparts—one of the largest of its type in the country—having an external diameter of about 350 feet. It is situated in a district which is particularly rich in such remains and this fact drew attention to the locality. At the end of the last century the late Canon Lyons suggested that this large fort was the site of the important royal residence of the Uí Eachach (a branch of the Eoghanacht, that later became the O'Mahony sept). The site is frequently mentioned in early Irish history under the name of Ráth Raithleann. It was at Ráth Raithleann that St. Finnbarr was born in the 6th century while his father was metalworker to the ruler there.

Because of the large area covered by the fort it was not practicable or useful to excavate the whole of it, and the attention of the excavators was therefore directed to certain areas. The entrance to the fort was completely investigated, trial cuttings were made through the ramparts to find the nature of the defences and a considerable portion of the inner part of the fort was excavated.

The entrance proved complex and most interesting. The discovery of a series of post-holes, cut for the most part in the rock, gave

* We wish to thank Mr P. P. Graves of *The Times* for calling our attention to this matter. A summary has already appeared in that paper and the full report was published in the *Irish Times*. The illustrations of some of the metal 'finds' kindly supplied us by the excavator of the site are from drawings by Mrs Ó Ríordáin.

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evidence of the position of the gate-posts which guarded the approach to the fort. There were originally several gates—one standing at the

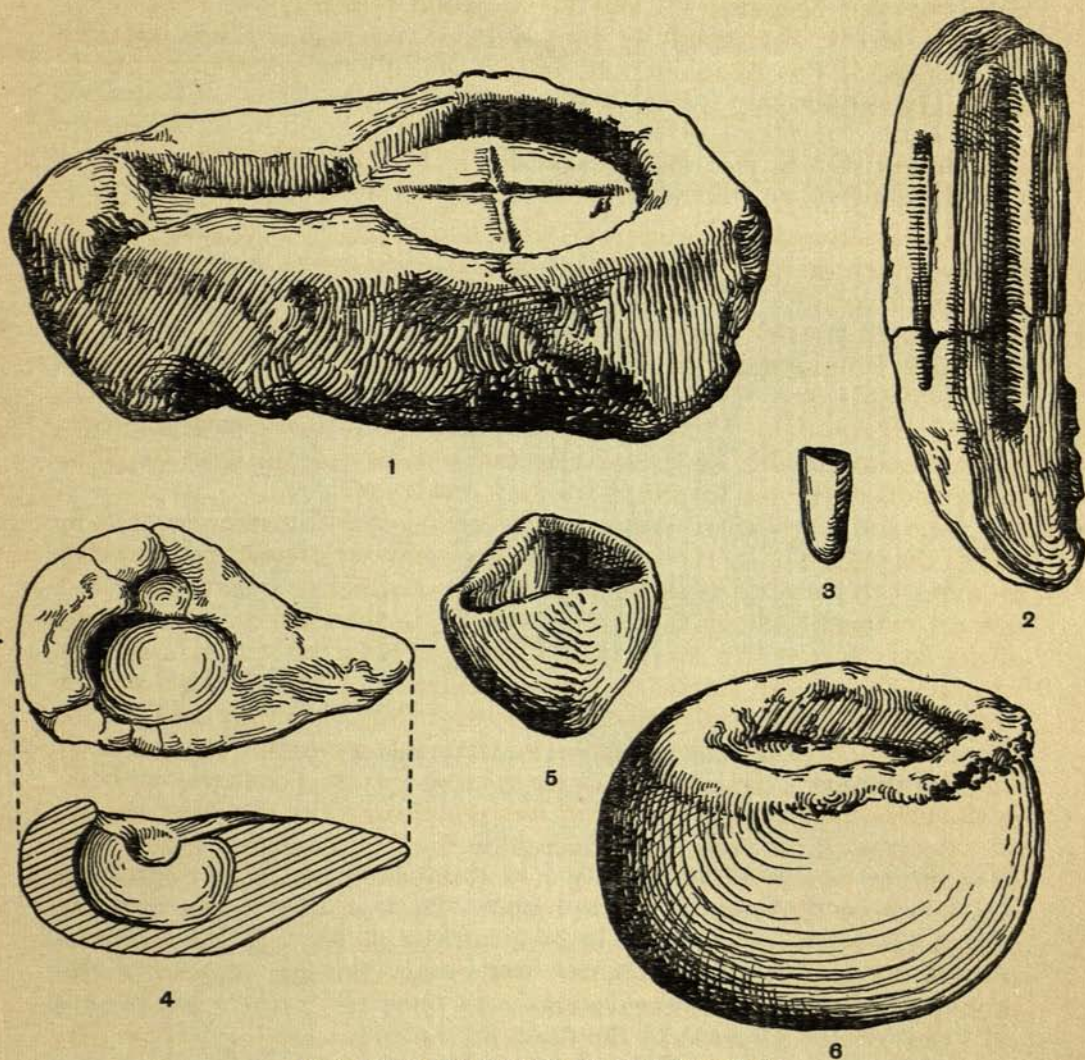


FIG. 1. FINDS AT GARRANES, CO. CORK (see pp. 97-8)

1, stone mould. 2, stone mould for metal ingots. 3, ingot cast from mould such as 2. 4, clay lamp. 5, clay crucible for melting metal. 6, spherical crucible for enamel. All $\frac{1}{2}$ except 4 ($\frac{1}{3}$)

ends of the outer bank, one at the ends of the middle fosse and a third at the ends of the middle bank. This bank terminated in two palisade

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trenches, one at either side of the entrance. These trenches had held rows of posts—small tree trunks of about six inches in diameter—which formed a retaining palisade to keep the material of the banks in position and to narrow the entrance, the end posts of the palisade holding the fourth and final gate of the approach to the interior.

The ramparts of the fort were of earth and rock and the fosses had been cut to a depth of about five feet—into the rock, where this happened to come in the way of the fort-builders. Within the fort were found many post-holes of the wooden houses of the fort-dwellers and it was

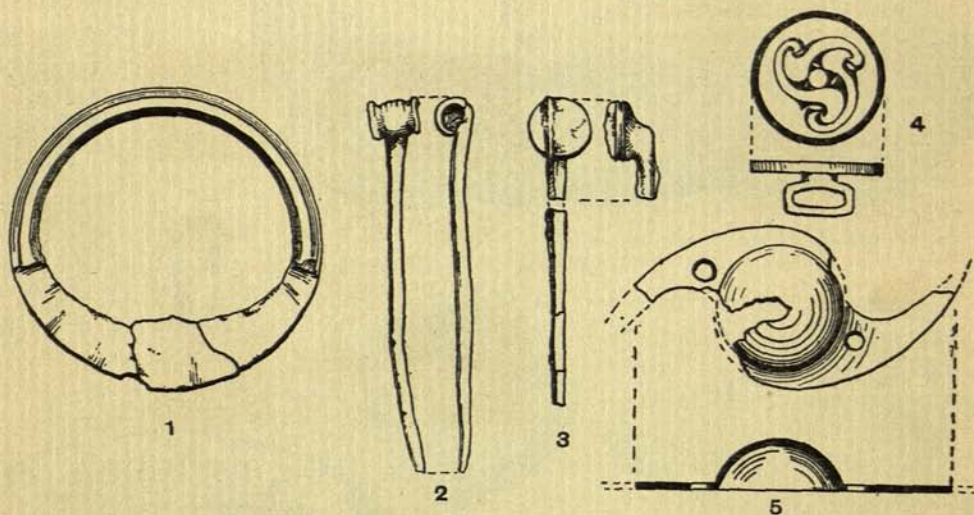


FIG. 2. BRONZE OBJECTS FROM GARRANES, CO. CORK

1, unfinished brooch. 2, pin of brooch. 3, unfinished pin. 4, button, silvered and with champlevé enamel. 5, ornament for attachment to leather? All $\frac{1}{2}$ except 5 ($\frac{3}{4}$)

also disclosed that at some period in the history of the site the inner bank had been strengthened and improved as a means of defence by piling against it and upon it large quantities of loose stones. On the southern side of the fort there was found under this layer of loose stones a deposit of dark material—charcoal and refuse of various kinds—and in this layer the majority of the finds were made.

From the nature of these finds and from the position in which they were found it was evident that the excavators had come upon the 'workshop' site of a metal-working community—probably the metal-workers who carried on their labours under the patronage of the ruler of the fort. Taking as a whole the evidence for the art- and metal-

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working carried on in the fort, it points to the discovery of one of the most important of such sites yet brought to light in Irish archaeology.



FIG. 3. SIDE VIEW AND CROSS-SECTION OF STICK OF MILLEFIORE GLASS, GARRANES

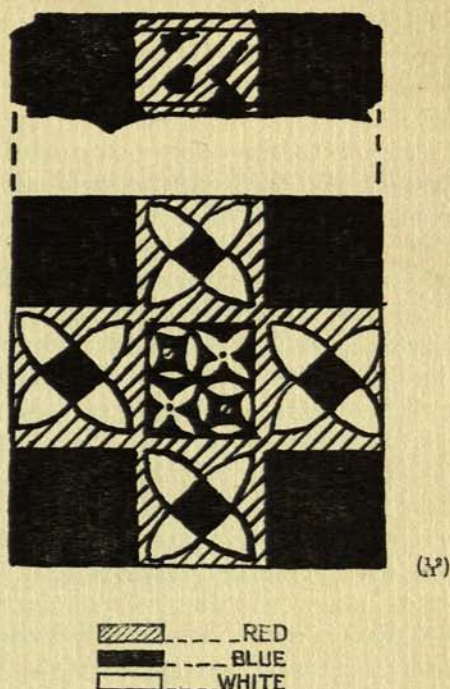


FIG. 4. DETAIL OF SMALL FRAGMENT OF MILLEFIORE GLASS, FOUND AT GARRANES, CO. CORK

Among the finds clay crucibles, whole or in fragments, were particularly numerous—the site has, indeed, yielded, more crucibles

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than were known from the whole country previously. These crucibles, are usually pyramid-shaped, and were used to melt metal; in some of them was actually found the bronze or trace of the bronze for which they had been used. A second type of crucible found, not formerly recognized in Ireland, though known in Scotland, semi-spherical in shape and made of a soft stone, was used for the preparing of enamel, as is shown by the accumulations of that material around the edges (see FIG. 1).

Of the metal finds the best was a small bronze button, the surface of which had been silvered and bore upon the face a 'triskele' ornament which dates it to the early 7th century. The spaces left around the ornament on the face had been filled with red enamel. Other metal objects included a bronze brooch in the course of manufacture—the marks of the worker's implements still recognizable upon it—and evidently discarded because it had cracked during the work. A bronze pin of another similar brooch was found, while another pin, also of bronze, was obviously cast and never finished, the marks of the joints of the mould in which it had been cast being quite clear (see FIG. 2).

An iron shears, such as is also found in crannógs, was discovered, as also were some small knife-blades and a pincers which might have belonged to the stock of a blacksmith.

More interesting and more important than the iron material was the discovery of some fragments of glass and several pieces of millefiori glass (made by fusing different coloured rods of glass together and pulling them out so as to lessen the diameter of the resulting composite rod). Such millefiori glass is made in rods and is then cut for inseting in ornaments. The circumstances of its discovery at Garranes, where rods of it were found as well as rods of single-coloured glass as would be used in its manufacture, proves that the millefiori glass found on Irish ornaments was a native product (see FIGS. 3-4).

Moulds of stone and clay for the casting of the metal objects were also found. One of the stone moulds was of a peculiar and unique type—evidently intended for the casting of small mirror-shaped objects with a rude cross upon them (see FIG. 1, 1).

A considerable quantity of pot-sherds were found. Most were fragments of Roman amphorae and some were of cooking-pots also of Roman type. This is of interest in view of the fact that only a few sherds of Roman pottery have been discovered in Ireland hitherto.

The main significance of the excavation is the evidence it provides of an intense metal-working tradition on a site datable to the early centuries of Christianity in Ireland. It shows further the necessity

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for much more investigation of the ancient forts (of which there are at least 30,000 in the country) and also the importance of excavation of habitation-sites as a means of obtaining an insight into the everyday life of early times.

All the finds are housed in the Museum at University College, Cork.

PEN DINAS, CARDIGANSHIRE

Professor Daryll Forde reports :—

A short period of excavation during the past summer has completed four seasons of work on Pen Dinas hill-fort. It is now clear that there were three periods of occupation on this dominating site, which lies between the converging estuaries of the Ystwyth and Rheidol rivers in Cardiganshire. The earliest site was an oval fort with a single entrance defended by a single bank and ditch on the level plateau at the northern end. The outer face of the bank was supported by timbers set up in a revetment trench reminiscent of that found at Hembury.

At a later period the rocky southern knoll on Pen Dinas—below which the ground falls very steeply on two sides for nearly 400 feet to the Ystwyth river and the shore—was fortified on the landward side by an independent series of defences of much greater strength than those which had been constructed in North Fort. The northern fort was probably abandoned at this time.

The main bank of South Fort, strengthened by an outer revetment built mainly of large pebbles carried up from the beach, was breached by two gateways giving landward access by gentle slopes. Sherds of Iron Age B pottery and a glass bead of a type characteristic at Meare lake-village were recovered from occupation layers on the inner side of the main bank.

In the final period the two earlier defended sites were linked together by low banks and on the landward side by a shallow ditch. The gateway which gave access to the narrow linking waist began as a wide driveway, but was narrowed and strengthened later with timber supports and gate posts so that an attempt could be made to defend the entire summit of the hill. Ditches in both North and South forts had been filled for a considerable distance at the points where the linking banks connected the earlier fortified areas. Interesting constructional details were observed in these areas and in one place sherds of Iron Age

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B pottery were recovered from the surface of the ditch filling at the foot of the crossing bank.

Although the defences were ruinous in places there was no evidence of wholesale demolition of the fortress and no Roman artefacts were found.

THE CHILDREN OF ISRAEL

Readers of the article in ANTIQUITY ('The Israelites in Sinai', 1932, VI, 434-44), by Major C. S. Jarvis, late Governor of Sinai, may be interested to read a fresh and concise presentation of his theories in the current number of the *Palestine Exploration Fund Quarterly* (January 1938, 25-40). Major Jarvis's brilliant identifications are coming, it seems, to be generally accepted. He believes that the Children of Israel left Egypt by a route along the sandspit of Bardawil, dividing the lagoon (the Yam Suf or Reed Sea) from the Mediterranean; and that the forty years wanderings took place in the northern part of the Sinai peninsula, particularly the region south of El Arish and Rafa, where alone could they grow the food they required. The case for this view is a very strong one, and the theory fits the recorded facts quite well. The field archaeologist has once more justified his methods.

EARLY MAPS

We have received several communications as to the identity of places on the Bodleian map illustrated in the December number of ANTIQUITY, p. 488. Owing to great pressure on our space reference to them must be deferred for publication in the June number.

Varia

The Editor is not always able to verify information taken from the daily press and other sources and cannot therefore assume responsibility for it.

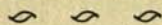
It is not always easy to account for the mutilation of barrows, especially those in lonely and isolated spots on the downs. A possible cause of some instances is suggested by a remark of John Byng's (*Torrington Diaries* [1787] I, 1934, 252-3):—'Some miles above Wantage I pass'd by a very magnificent barrow; and saw a smaller one, judiciously scoop'd out for a shepherds cot'. Byng was riding along the Berkshire downs from Aldworth to Wantage, and it is possible that the scooped barrow may have been Scutchamer Knob.



It has always seemed to the writer that, judging from its shape, and more especially from the straight angular course of the parish boundary, the town of Woodstock must formerly have been surrounded by walls. Inspection of the line described, however, produced no result; though a more thorough investigation with the spade might well do so. A passage in the *Torrington Diaries* (1787) certainly seems to lend colour to this suggestion:—'The worst thing abt. Blenheim is the vicinity of the Town [of Woodstock], whence come eternally all the horrid noises of dogs, bells, etc., etc.—surely the Duke of M: shou'd *along the wall of the Town* [our italics] leading from the entrance, plant copiously, and not permit the full gape of all those houses upon his park'.



Celtic fields associated with a habitation-site have been found near Sarrebourg (Moselle) by Mr C. E. Stevens, whose account of them is published in *Revue Archéologique*, Jan.-Mar. 1937, pp. 26-37.



In the *Transactions* of the Rhodesia Scientific Association, xxxiv, part 2, Aug. 1936, pp. 10-18, Miss Caton Thompson disposes of some criticisms published by Dr Laidler in a previous number of the same publication (xxxiv, part 1, Dec. 1934).

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Those wishing to keep abreast of recent work on Hadrian's Wall cannot do better than obtain the masterly summary recently written by Mr Ian Richmond, of King's College, Newcastle-on-Tyne, called 'Recent Research and Hadrian's Wall', printed in *The Heaton Works Journal*, December 1936, pp. 286-300 (Messrs C. A. Parsons, Newcastle).



Prof. Watson's explanation of the origin of the island-name Iona was touched upon and summarized in *ANTIQUITY*, 1933, VII, 464-5. It appears to be connected with the Celtic word for yew-tree; but it has always seemed difficult to accept—at any rate it seemed so to the present writer—because of the extreme rarity of yews growing naturally in the Western Isles. This difficulty is to some extent resolved by the mention of a yew-wood existing in the middle of the 18th century on the island of Berneray, lying between Harris and South Uist, outer Hebrides (Defoe's *Tour*, IV (1742), 255). It would be interesting to know if it still exists and whether others are known in the Western Isles. No trace of this wood, or any other, appears on the large scale Ordnance Map (Hebrides &c., sheet 26; ed. of 1904).



The discovery in 1936 by L. N. Solov'ev of several 'eolithic' sites [in Abkhazia, U.S.S.R.], is reported. The most important are near Andreevskoe and Neidorf (Neudorff). At Andreevskoe ashes, charcoal and numerous wooden implements (awls, pins and other pointed tools predominating) were uncovered in a stratum of peat. The largest specimens included hoes, some of which had near the pointed end twisted (or braided) thongs of vegetable fibres. The same cultural layer yielded animal bones and flint and limestone, unretouched implements of 'eolithic' type. From the geological evidence this site was attributed to the Mindel glaciation. In a stratum of interglacial peat, overlaid with thick moraine deposits, another discovery of many well-preserved wooden implements, typologically akin to those from Andreevskoe, was made in the neighbourhood of Neidorf near Sukhum. No stone tools were present.

We quote the above summary with all reserve from the *American Journal of Archaeology*, XLI, Oct.-Dec. 1937, pp. 618-9, where full references are given.

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Since the publication by Mr G. C. Dunning and the writer of an article on Roman Barrows in *ANTIQUITY*, March 1936, an unrecorded example has been located in East Kent by Mr M. D. Collier, a member of the Kent Archaeological Society.

It is situated in the parish of Stowting, in a small copse adjoining the western side of the Kentish Stone Street, 550 yards north of Round Down Wood (Kent 6-inch sheet 66 sw). The barrow is 9 feet in maximum height, 81 feet in diameter, and 270 feet in circumference; it is but little spread, and there is no ditch. It has the flattened top characteristic of Roman burial-mounds, and its position hard by the side of a Roman road is a further reliable clue to its date. There are no signs of any excavation, and the barrow, which at present has young oak trees and wild nut bushes growing on it, is in an excellent state of preservation.

R. F. JESSUP.



Miss M. V. TAYLOR, F.S.A., writes :—

' Dr F. O. Waagé's protest against the misuse of the word "Samian" to describe pottery made in Gaul is timely (*ANTIQUITY* 1937, XI, 46 ff). As he says, the word should be kept for the pottery now known to have been made in the island of Samos itself. But why perpetuate the equally incorrect word "sigillata" for pottery which is not stamped? Why should not the so-called "Samian" be called what it is—Gaulish varnished ware or Romano-Gaulish varnished ware or Gaulish-Arretine ware, whether it is plain or bears a stamped pattern? And in England at any rate it is not even now too late to drop the ugly and false "sigillata" which has only crept in during the last twenty years or so and has never been popular. Precision, correctness and brevity together sometimes justify the use of foreign words and phrases for describing technicalities; brevity alone is insufficient; when incorrectness is added the use is inexcusable'.



Three years ago Mr Leigh Ashton published a Chinese Bronze of the Huai style, ascribed to the period of the Warring States (481–206 B.C.) dug up at the Dane John in Canterbury: now comes the news of another of similar style dug up in Rome.* The problem of how

* Birgit Vessberg in *Bull. of the Mus. of Far Eastern Antiquities*, Stockholm, no. 9, p. 127.

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they came to Europe is unexpected. Such things did not fall into the hands of the collectors of Chinoiserie in the last two centuries, and, unlikely as it seems, they must have come across along the silk route in the early centuries A.D.

E.H.M.



It is good news that 'two volumes of a definitive work by Dr Reisner, *The History of the Giza Necropolis*, are ready', and that the first volume was to go to press in the autumn of last year. Their publication will be an event of the first importance, not only to archaeologists but also to students of art. From the plundered mastabas near the Pyramids, Dr Reisner has recovered not only a mass of information about the people and rulers of the Old Kingdom, but also some relics, such as the alabaster portrait-heads, of unsurpassed artistic excellence. The writer well remembers the thrill of participating (in the capacity of a learner) in some of this work just a quarter of a century ago. The quality of Old Kingdom art has rarely been reached by the art of any other period or region; but authentic specimens are not common, and popular judgment of Egyptian art is usually formed by inferior examples of later ages.



Ancient habitation-sites on Kodiak Island, one of the Aleutian Islands, are spotted by the vegetation which grows upon them. 'The accumulated deposits of a village, ranging in depth from a yard or so to 16 feet, contain ashes, shells, sea-urchin spines, rotted wood and soil, bones of fish, birds and mammals (including whales), blown dust or silt, organic refuse of all sorts'. This organic soil is naturally much more fertile than the rest. 'The sites were covered with stinging nettles and wild parsnip; over burial-sites elder-berries were common. One site at Uyak Bay was covered every year with handsome forget-me-nots, the only ones found in the region. Monkshood and fireweed were other prominent indicators of sites'. (*Time*, 27 Dec. 1937, summarizing an article by the excavator of the sites, Dr Hrdlička, in the previous number of *Science*).



Standardization is one of the penalties of the use of machinery. Its tyranny is felt by all proof-readers, and the following opinion provides an amusing contrast. It is that of Andrew Simson who

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changed from minister of Kirkcinner, a Wigtown parish, to a printer at Edinburgh. ' 'Tis probable ', he says, ' some criticks will find fault with me for not using an uniform manner in spelling and pointing. But in regard our greatest criticks have not, for anything I know, given us an exact standard, either for the one or the other, and these sheets being *set* by two or three *compositors* at the same time, and each of them spelling and pointing differently, when it came to me to revise, I was not very nice in making several alterations of what they had done, knowing that I could produce sufficient authority from learn'd authors for each of them '.



The Trustees of the National Gallery have recently purchased four panels claimed to be by Giorgione (c. 1478-1511) for the sum of £14,000. (*The Times*, 30 Dec. 1937).



For the safeguarding of Britain's oldest and finest prehistoric monument, Avebury, the sum of £11,000 is asked ; the whole of this sum has to be obtained from the public by voluntary subscriptions.



As we go to Press information has reached us that a second original entrance, through the Bank and Ditch of the Circles of Avebury, has been identified during the excavations at present in progress in the north-western sector of the monument, undertaken by the Morven Institute of Archaeological Research under the joint direction of Alex. Keiller and Stuart Piggott. The causeway of this northern entrance would appear to run obliquely under the present Avebury-Swindon road in a north-westerly, south-easterly direction. Further details will not be available until the completion of the excavation, but it would appear not improbable that this entrance led in a direct line to the centre of the northern interior setting, even as the final section of the West Kennet Avenue, if produced, would have led to the centre of the southern interior setting.

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The text contains concise and competent descriptions of all the paintings; but its chief value lies in the introduction, where Mrs Davies, from the fulness of her experience, discusses the technique of ancient Egyptian painting. The common term 'fresco' is incorrect: as she shows, work so described is really 'mural painting', with colours in tempera on a stucco foundation. The pigments used are mineral, such as ochre, malachite, azurite, etc. The only still doubtful question is that of the means used for binding the pigments. Therefore, in these mural paintings we find basically the same procedure as occurs again in the Roman period, in many of the mummy-portraits from the Fayum, which in essentials remained unchanged until the invention of painting in oils by the brothers Van Eyck.

It is precisely in connexion with the methods of painting peculiar to the Egyptians that sufficient praise cannot be given to the exact colouring of these copies. Mrs Davies stresses the point in her introduction, remarking 'the value of my contribution depends wholly upon the degree of faithfulness to the originals'. I consider that for 'faithfulness to the originals' nothing could surpass her work. If one compares it with the coloured reproductions in older publications, such as those from the tombs of Beni Hasan in Newberry and Griffith's book, then Mrs Davies' achievement can be fully appreciated. Further, it is not merely a question here of outward fidelity to outlines—bearing in mind, of course, the damage suffered by the originals—and to colouring. There is something more: the artist has clearly got within the skin of the Egyptians, so to speak, where their methods of drawing and painting are concerned—she has, in fact, a profound insight into Egyptian art, with a consequent understanding of the mind of Egypt.

A. SCHARFF.

ARCHAIC SEAL-IMPRESSIONS. *Ur Excavations*, vol. III. By L. LEGRAIN, with an introductory note by SIR LEONARD WOOLLEY.* *Oxford University Press*, 1936. pp. VIII, 51 and 58 plates. 32s 6d.

For our knowledge of the development of archaic art in Babylonia we are largely dependent on seals and their impressions made on clay jar-stoppers. Since A. Moortgat treated the subject so admirably in his *Frühe Bildkunst in Sumer* (1935), we have been able to recognize four main divisions of archaic glyptic art: the earliest large group of seal-impressions which we possess goes back to the fourth stratum in Uruk (c. 3300 B.C. upwards, assuming a conservative chronology), representing ritual-subjects, battle and hunting scenes, and in particular, animals fighting with each other. Besides those in which the animals are shown true to life, there are others where they appear drawn in heraldic style. Characteristic of the whole group is the predilection for plastically-

*Translated by Professor R. G. AUSTIN.

REVIEWS

worked relief. The next stage in development is the Jemdet Nasr group (c. 3200 B.C. upwards), named after a small ancient site in north Babylonia; in general the principles of the previous group are continued, conventional beasts being frequently shown in front of temples or domestic animals before their stalls made of rushes. The succeeding group is named by Moortgat the Mesilim epoch, after the earliest ruler historically known to us; but in spite of numerous points of likeness between it and the Jemdet Nasr group, there is a break in the line of development between the two. In the formation of the individual figures, the plastic relief of the earlier age contrasts with the later plane delineation with stressed outlines; out of the traditional stock motifs, the 'figure-band' develops. By way of an important intermediate stage, belonging to the same period as the great collection of clay tablets from Fara (Imdugud-Sukurru type, from a name found on a seal at Fara), the art of the Mesilim period continues in the last division of archaic art, the Urnanshe and Lugalanda group, called after rulers so named, c. 2850-2750 B.C.

The material from Ur made available by Legrain consists mainly of seal-impressions from jar-stoppers, chiefly found in a stratum of débris immediately below the famous royal cemetery, for which the excavator has coined the name 'seal-impression stratum IV-V'. From their position they doubtless belong to an earlier period than the cemetery, and this difference in date has importance, for it was not until after considerable masses of débris had been deposited over the seal-impression stratum that the graves were made. A fairly satisfactory date is made possible by the finds of clay tablets there with the stoppers, which Father E. Burrows has published (*Archaic Texts*, 1935). Their script suggests that these tablets may have a close connexion with the latest stage in development of the Jemdet Nasr script: a fairly large gap in time separates them from the next group after that, the Fara tablets. Since we can place the Fara tablets as coeval with the Imdugud-Sukurru seal-type, we get for the seals from stratum IV-V at Ur the period from the end of the Jemdet Nasr epoch to the Mesilim epoch inclusive. The presence of finds which must be placed at the least in the Jemdet Nasr age should not invalidate these limits, for a seal may have been in use over a long period; on the other hand, such seals found in this stratum as are of a demonstrably later date (no. 476, already noticed by Legrain, and especially nos. 298-300) must have found their way there when the overlying strata were disturbed.

The motifs of the seal-impressions from stratum IV-V can mostly be derived from the Jemdet Nasr art. I may mention the following: lines of animals walking and lying down, animals gnawing at a tree, cows coming out of their stalls, generally with a naked man preparing butter in jars, a motif which still lives on in the mosaic friezes of Kish and Tell el-'Obēd.

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ANCIENT EGYPTIAN PAINTINGS selected, copied and described, by NINA M. DAVIES with the editorial assistance of ALAN H. GARDINER.¹ 104 coloured plates in 2 vols., folio, and descriptive text in 1 vol. (Special publication of the Oriental Institute of the University of Chicago) University of Chicago Press, 1936.

It is no exaggeration to describe this as the most finished work on Egyptian art that has appeared during the last decade. Mrs Davies, who is herself a painter of distinction, and her husband, the well-known Egyptologist, N. de G. Davies, have worked together in Egypt, winter after winter, for some 25 years. Mr Davies has surveyed the rock-tombs of different periods and in various sites, while his wife has copied the beautiful paintings in the tombs. The original copies are mostly in the possession of Dr A. H. Gardiner, though some are in the Metropolitan Museum of New York, and 22 have lately been acquired for the British Museum. Complete accounts of all the tombs where copies have been made have not yet been published, for it proved too expensive for all the available copies to accompany such accounts as have appeared, if the colours were to be reproduced as closely as possible. In this way a considerable collection of copies accumulated, and there was no prospect of their being made accessible until the matter was taken up by Dr Gardiner, who from the beginning had given Mrs Davies every encouragement in her work. Now, with his editorial assistance and the help of Mr Rockefeller, 104 of the best copies are available, many of them reproduced on the original scale.

Selection was very difficult, as both artist and editor point out, and the connoisseur will probably find some of his favourites absent, while others are included which he will think might have been omitted. Naturally such a choice is highly subjective. Copies from the Theban tombs of the New Empire predominate, in particular those of the 18th Dynasty (c. 1500-1350 B.C.); that is quite as it should be, for the majority of the coloured paintings still extant come from Thebes, and it was here that Mr and Mrs Davies made their headquarters. One is tempted to think that there would have been an actual gain if only Theban paintings had been chosen, although in this case greater stress would have had to be laid on the paintings from tombs of the 19th-20th Dynasties which are generally, though wrongly, neglected. A few copies from the tomb of Antefoker (Middle Kingdom), and some from tombs of the late period (e.g. Pabasa, 26th Dynasty) would have effectively rounded off a publication of exclusively Theban tomb-paintings. But even so, the Theban paintings

¹Translated by Professor R. G. AUSTIN.

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are inexhaustible : here for the first time one finds paintings from the beautifully preserved tomb of Menna (no. 69, pl. 50-55), and from the hardly less important tomb of Djoser-ka-re-seneb (no. 38, pl. 36-37). An effective stylistic contrast to these is formed by the splendid paintings from the tomb of Amenemheb (no. 78, pl. 38-41, negro dancers, pelicans). Such a bewildering variety of paintings is here to charm the eye that no one will now wish to uphold the claim that the tomb of Nakht (no. 52, pl. 47-48), the best known and most often visited of all the Theban tombs, is the only one really worth seeing. It might perhaps have been desirable to omit the reproduction of some coloured temple-reliefs (pl. 12-13, 86), which in fact belong to a different family of paintings, and to include a few more specimens from the 19th-20th Dynasties. The strong colouring of that period is very attractive, as well as the high relief of the figures and the deep religious spirit which so many paintings reveal even if the vivid scenes from every-day life recede into the background. For example, I should regard plate 102 (water-drinking under a palm-tree) as a specially happy example of the painting of the Ramessid period. One cannot simply dismiss this art as retrograde and decadent.

The Theban paintings, which preponderate, are introduced and interspersed here and there by some from the Old and Middle Kingdoms and from the Amarna period. Apart from the geese from Medum, that strangely mature painting of c. 2800 B.C. (pl. 1), the Theban work gets much the better of the comparison. The reason is not that the earlier art reached a lower standard, but that it produced far fewer actual paintings (excepting the painted reliefs), thus providing a much more limited choice. Further, details of coffins (pl. 5-6), however subtle in themselves, cannot really make up for what is lacking. Probably, therefore, it would have been advisable to abandon the plan of including examples from the earlier periods. The art of Amarna, not so characteristically in evidence at Thebes as at Amarna itself, is chiefly represented by the charming bird-pictures from the 'green room' in the North Palace (pl. 75-6). It has already been pointed out by H. Frankfort,² in the original account of the Amarna paintings, how instructive the comparison of these bird-pictures with the 'birds in the tree' from Beni Hasan (pl. 9, Middle Kingdom) is for showing the stylistic development of the different epochs. Even the whole-hearted admirer of Tutankhamen finds something to his taste, for here are two fine reproductions, practically on the original scale, of two sides of the chest covered with battle and hunting scenes (pl. 77-8).

² H. Frankfort, *The Mural Painting of El-Amarna*, London 1929. In view of the comparison here mentioned, and of numerous others which suggest themselves in running through the pages, it must be regretted that Mrs Davies' paintings are bound up in two volumes, instead of being on loose sheets in a portfolio : this would have made them much more useful for purposes of comparison.

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It is not easy to find in Legrain's material seal-types demonstrably belonging to the Mesilim period. There is none with the unmistakable 'figure-band' in the Mesilim style, such as we know from the Fara seals and again lately from H. Frankfort's excavations in Khafaje and Tell Asmar (northeast of Baghdad); this is remarkable, as it turns up sporadically among the seals in the royal cemetery. One would like to assign to the Mesilim period those seals depicting warriors wearing a long pleated garment girt up high in front, for such a costume is frequently found at that time, the chief example of it being in the mosaic frieze in the palace at Kish. However, the style of these seals is against such attribution: it brings them into line rather with the group deriving from Jemdet Nasr. We may probably conclude that the finds from seal-impression stratum IV-V date from a period anterior to the development of the Mesilim style.

The most characteristic seal-type from this stratum is that which interweaves into a whole archaic letters with linear designs, or shows letters only in a fan-shaped and columnar arrangement already familiar from the clay tablets. Representations of this type have hitherto only been found at Uruk, in a stratum of like date, and in Fara. For the present it is not possible to conjecture the meaning of the lettering, which is not surprising in view of our limited knowledge of ancient writing. Several times place-names apparently occur, such as Ur, Uruk, Larsa. It should be emphasized that this type of seal has no connexion with earlier times nor does it appear again later. It may yet be of the highest importance for archaic chronology.

I ought perhaps to note the seal-types that might be expected in the stratum, but which in fact do not appear. These are, first the type of short, thick, roll-seal with animals, done in rough *Kugelbohrtechnik*, and in particular the seals in which the animal-figures of the Jemdet Nasr period are transformed into linear designs. According to Frankfort it is precisely this type, so important for the earliest part of his Early Dynastic period, which forms the transition-stage from the Jemdet Nasr to the Mesilim epoch.

To sum up, the seals from stratum IV-V may be judged to be descendants of the Jemdet Nasr art, from which they differ chiefly in showing less regularity of composition and a lack of repose foreign to the Jemdet Nasr type.

A. FALKENSTEIN.

ARCHAEOLOGICAL RECONNAISSANCES IN NORTH-WESTERN INDIA AND SOUTH-EASTERN IRAN. By SIR AUREL STEIN. *Macmillan*, 1937. pp. xx, 267, with 60 plates, 18 plans, 4 maps. 63s.

In August 1930 Sir Aurel Stein started on his Fourth Central Asian Expedition, under the auspices of the Harvard University. Ten months later

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his work was cut short by the machinations of Nanking agitators ; his finds were confiscated. Sir Aurel promptly decided to carry out an alternative plan, and follow up in south Persia the clues he had already discovered in British Baluchistan, linking the prehistoric civilizations of the Indus with those of the Tigris and Euphrates.

Before starting for Persia Sir Aurel found time for a short trip to the Salt Range area of the Punjab, to clear up some moot points connected with the Indian campaign of Alexander the Great. Synopses of this tour and of his Persian journeys have already appeared in various periodicals. Two of the latter and the Punjab operations are now published in full in the volume under review.

That Alexander traversed the Salt Range by the Nandana Pass and crossed the Jhelum (Hydaspes) opposite Jalalpur may now be taken as certain ; Sir Aurel's points against a crossing higher up that river are conclusive. The exact site of the battle with Porus will probably never be known ; the westward shift of the Beas (Hyphasis), as Sir Aurel shows clearly, must long ago have obliterated the altars which Alexander set up on its bank.

Before the discovery of the ' Indus Civilization ' archaeologists had failed to make Indian pottery ' talk '. The sudden emergence of ' Indo-Sumerian ' affinities set people guessing. Sir Aurel at once saw the need to test speculation by evidence, and, with pottery as his main clue, he began to probe into the archaeologically almost unknown country beyond the Indus. Two rapid tours (1927-8) through Waziristan, Upland Baluchistan and British Makran (Gedrosia) revealed a series of ' chalcolithic ' cultures, the affinities of which with the ' Iranian Highland Culture ' have been neatly summarized by Dr. Frankfort in *ANTIQUITY* 1932, VI, 504-7. Precise dating cannot be expected in ' reconnaissances ' so far-flung ; for want of time and labour, digging is rarely possible. But no one knows better than Sir Aurel how to choose a likely spot, and he did succeed in getting stratigraphic evidence to support the culture-sequence suggested by style.

Of his Persian journeys the first took him through Persian Makran and the hills that lie behind it into the Jaz-Murian depression and thence over the uplands to Kerman ; the second from Kerman to the coast at Minab (Old Hormuz, east of Bandar Abbas) and along it to Bushire. (The third journey, in Fars, is fully published in *Iraq*, October 1936).

Of the areas traversed the most interesting is the Jaz-Murian basin, the southernmost of the arid depressions that separate Persia proper from Khurasan. Fanuch, on the threshold, yielded chalcolithic and ' late prehistoric ' pottery and ' cairn burials '. The Bampur oasis on the east is full of typical chalcolithic sites, of which Khurab, with its funerary pottery linking Susa I with Shahi-tump

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in British Makran, is the most prolific. The incised steatite and imitation-steatite vessels of this area (pp. 109, 117, 121) also point to Susa. On the westward trek of 163 miles from the Bampur river to the Halil Rud (an ethnic divide between Persian and Baluch) only early Islamic pottery was found, always associated with *qānāt* irrigation, a fact which confirms Sir Aurel's view that irrigation by underground channels was not known to chalcolithic folk. The valley of the Halil Rud shows evidence of a shift of the population upstream, due presumably to progressive desiccation, the chalcolithic sites being on its lower course only, 'later prehistoric' and pre-Muslim settlements are higher up, and early Islamic still higher. Near the head of the valley, the debris of Shahr-i-Daqianus supports the identification of that site with the Jiruft of the early Arab geographers, and the 'Camadi' of Marco Polo, a flourishing trade centre which was ruined by the Mongols.

In the Kerman highlands chalcolithic pottery was found at Tal-i-Iblis, some 40 miles southwest of the capital, and traces were seen on the way to Minab, but the coastal plain, both of Persian Makran and the Gulf right up to Bushire, yielded none. This Sir Aurel at first took as evidence against the existence of maritime intercourse between the Gulf and India in prehistoric times, but an alternative explanation is suggested later by signs of subsidence along the Gulf shore. Chalcolithic pottery, however, with button-seals like those of Arpachiyah, was found in the Galehdar valley in the near hinterland of Tahiri, and close to Bushire, in 1913, M. Pezard excavated an Elamite settlement, with bricks inscribed in cuneiform, overlying pottery of Susa I and II. Perhaps the routes between Bampur, Sistan and the Kej valley in British Makran have something on the point to reveal.

'Cairn burials' were found in Persian Makran, in the hills behind it, in the upper Bampur basin and north of Kerman, but not on the Gulf coast. Sir Aurel has tentatively assigned them to the 'early historical' (Parthian) period on the evidence of similar sites in British Makran. The bits of bone found in them indicate a 'Zoroastrian' type of disposal, the bodies being first exposed to wild animals; only the fragments remaining were interred. It is not possible yet to determine the upper and lower limits in time of this practice, and Dambakoh in Makran, with its 1700 cairns, is puzzling, for its pottery bears patterns with chalcolithic affinities.

The ruins of the great maritime cities of Siraf (Tahiri), Tiz and Old Hormuz yielded vivid proof of the wealth of Islam in the darkest hours of European history. Cliff-bound Siraf in particular, with terrace on terrace of closely packed mansions, its aqueducts and rock-cut cisterns, and its planned 'Campo-Santo', Sir Aurel not inaptly compares with the Genoese Riviera. The dating (A.D. IX, X) of these early Muslim sites is assured by sherds of Samarra and

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Brahmanabad (Mansura) types, and Chinese porcelain, discussed by Mr R. L. Hobson in a concise appendix.

Sir Aurel has no use for archaeological work which is not supported by 'exact topographical information'. He took with him to Persia Muhammad Ayub Khan of the Survey of India, to whose help is due a plane-table survey of most of the 2400 miles of appallingly difficult country over which they marched, and site plans, some of them most intricate, of a dozen of the mounds examined. The results of the survey are embodied in two superb coloured maps. (In a few cases the marking of ancient sites does not tally with the text). To Mr F. H. Andrews is due the thoughtful grouping of the illustrations; the plates, especially those in colour, are among the most useful features of this book.

By his courage and tenacity in the teeth of daunting difficulties, political and physical, Sir Aurel Stein has proved, beyond cavil, the continuity of the Iranian Highland culture from the Indus to the Tigris. An early phase is suggested by the rectilinear decoration of some of the pottery from the Bampur area, a later phase by polychrome ware; but to confirm this, stratified evidence is not forthcoming. Indian influence (bull, *pipal*-leaf, goddess-figurines) is here conspicuously absent; the ibex is all-pervading (*e.g.* pl. VII). Curiously, not a trace was found of the palaeolithic and neolithic cultures in which peninsular India is so prolific; how they got there is still a puzzle. The evidence for the 'late prehistoric' and/or 'early historical' periods is still rather nebulous. To compare this Persian material with that published in many bulky volumes by Sir Aurel and others from India, Sistan and Central Asia is not easy; a handy synopsis of forms and patterns, with an analysis of the distribution of each would help future study. But, as pointed out by Dr Frankfort in his review of *Gedrosia*, 'reproductions, however adequate' cannot elucidate the 'technical qualities and processes of manufacture' so important in unravelling the problems of the Ancient East. It is good news that some of these Persian sherds are now in the British Museum, and it is to be hoped that, in due course, the 'chalcolithic' specimens will find place alongside those to which they are most closely allied; including, perhaps, a few from British India.

F. J. RICHARDS.

OXONIENSIA: vol. I, 1936 (*Ashmolean Museum, Oxford*).

ULSTER JOURNAL OF ARCHAEOLOGY: 3rd series, vol. I, part I (January 1938).

We cordially welcome these two new publications. They are additional evidence of that remarkable renaissance of human studies which has taken place during the last two decades. It is proper that Oxford should at length become

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involved, for the Oxford district is the heart of England and may once have been as civilized as the Wessex downs.

The contents of both volumes are altogether admirable, the names of authors contributing to *Oxoniensia* are alone sufficient guarantee of excellence. Major Allen's air-photographs, the finest of their kind ever taken, illustrate two of the articles. Prehistory is represented only by one article, but it is one that signalizes the essential feature of the region—crop-sites, a feature recognized by the genius of Haverfield long before the invention of aeroplanes. Mr Raleigh Radford's account of the rediscovery of the Roman Villa at Ditchley from the air and of his excavation to it is the major contribution to the volume. Major Allen's series of air-photographs of the villa (some of the best of which are reproduced) provide an almost complete synopsis of the technique of this new instrument of research. History is represented by articles on St. Frideswide and her times (Professor Stenton), covering a characteristically wide sweep of contemporary history; on the Oxfordshire Hundreds by Miss H. M. Cam; and on a contemporary map of the Defences of Oxford in 1644 by Messrs. Lattey, Parsons and Philip. There are also Notes and News, and Reviews. The introductory note by Dr Salter states the need of such a publication as *Oxoniensia* and makes certain good suggestions (vol. II, which appeared recently, fully maintains the high standard set).

The *Ulster Journal of Archaeology* also marks a renaissance—that of a celebrated Journal which had become extinct. It is born again in a modern form. The contents cover a wide field embracing prehistoric archaeology, folk-lore and primitive customs and historical by-ways. There are Notes and Reviews. The archaeology is admirable. We hope that, as time goes on, it may be possible to turn the searchlight of archaeology on to the dark region of early Irish history, as is done by Mr Lawlor in his two contributions to this number. The outstanding feature, both of the Journal and of its background, is the scientific excavation of chambered cairns, described by Mr Estyn Evans. We hope that in due course the inhabited sites of Ulster will be similarly explored.

The format of both the journals reviewed is up-to-date and well chosen. The old tradition of size (first broken by ANTIQUITY) has been cast aside for one more suitable for an illustrated publication. The chief divisions are the same (Editorial, Articles, Notes, Reviews). The covers are good, that of *Oxoniensia*, with its contents and publisher on the outside, being much the best, though the vignette is weak. The *Ulster Journal* does not give sufficient prominence to the important fact of price, which after all is what potential subscribers want to know first. (It should be added that the price seems to us to be too

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low). This information is concealed in a reprint of a preliminary circular included without pagination at the end; and it does not (as does *Oxoniensia*) name any place or publisher on the cover. We make this criticism because we know from long experience that it is not enough to provide readers with a good well-cooked meal, as do both these journals; the price and menu are equally important. Moreover it would be easy to correct such a small, if important, deficiency.

For the benefit of intending supporters we give this essential information here. *Oxoniensia* is published and sold by the Oxford Architectural and Historical Society at the Ashmolean Museum, Oxford. One volume is issued annually to members, the annual subscription being fifteen shillings and carrying with it all the other privileges of membership. Entrance fee, five shillings. Price of each volume to non-members, one guinea. Write to the Hon. Secretary of the Society at the Ashmolean Museum, Oxford.

The *Ulster Journal of Archaeology* is sponsored by a Committee and an Editorial Board. 'If sufficient support is forthcoming, two volumes (? parts) will be published annually'. The subscription is ten shillings a year. Intending subscribers are invited to forward 'one of the annexed forms', but these are not available in our copy. Presumably it is sufficient to write to the Hon. Editor, Mr O. Davies, Queen's University, Belfast. We hope that these remarks will be accepted in the helpful and friendly spirit in which they are made. We wish both journals the success they so thoroughly deserve; otherwise we should not trouble to make them. O.G.S.C.

TREASURE TROVE IN LAW AND PRACTICE from the Earliest Time to the Present Day. By SIR GEORGE HILL. *Oxford: the Clarendon Press*, 1936. pp. ix, 311. 21s.

Treatises on comparative law, which are not at all common, are apt to become unwieldy. By selecting a subject of strictly limited scope Sir George Hill has produced a volume of equal interest to the Lawyer and the Archaeologist. He says with great modesty that the book claims to be 'nothing more than a collection of material' but it is the first and only comprehensive presentation of the subject, and its conclusions are both authoritative and valuable. It is almost world-wide in its scope and the labour involved in its preparation must have been prodigious. Sir George expects that no one is likely to read the book through, to which one can only reply that a reviewer, like other men, is not bound to incriminate himself.

The law of treasure trove depends in the first place upon the general theory of the law of property adopted or implied in any particular legal system, of which it forms a very small fragment. The indirect use of the law for the preservation

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of antiquities is a very recent development, in fact as modern as the conscious desire to preserve antiquities as an end in itself.

We can therefore put aside archaeological preoccupations, and view the problem of treasure trove as the question of the ownership of a valuable chattel the existence of which was unknown until it happened to be found. The three claimants are the finder, the owner of the soil, and the ruler. Every system of law can be viewed as an apportionment of rights between one or more of these three. Many systems have sought to deprive the finder of any rights at all, but provisions of this kind have always failed for the obvious reason that they always led to concealment. You have first to find the finder, and then to find the treasure that he has hidden or sold.

The Roman law varied from time to time, but in obedience to its general principle, that occupation was the foundation of ownership, it generally divided the proceeds between the finder and the owner of the soil. If the find were made on public land the treasury came in for its share, but simply as owner of the soil, and not under any paramount state claim.

With the growth of feudalism the more primitive system known as the principle of regality regained possession. The king claimed title in two ways. The idea of barbarian monarchy was that treasure in the absence of any better claimant naturally belonged to the king because, for one reason, he alone could coin money. Feudalism added to this the principle that the king was the ultimate owner of the soil and that all others were his tenants, and consequently the ownership of an unknown treasure would in theory not have been granted out by the king to his tenant, but would have remained in him. The same principles are the basis of the doctrine that mines royal (*i.e.* gold and silver) belong, as they still do in England, to the king.

From the close of the Middle Ages the clue to the development of the law is a struggle between the principles of regality and those of the Roman law—an illustration, in fact, of the struggle for the reception of the Roman law in opposition to feudal principles which makes up so much of the legal history of Western Europe. The French Civil Code, for example, gives half to the finder and half to the owner of the soil, or if the finder is also the owner then he gets the whole. This is a complete victory of Roman law over the principle of regality and part of the victory of the *droit écrit* over the *droit coutumier* which was one of the lasting results of the French Revolution.

In England, as anybody might expect, the position is a compromise, entirely illogical and eminently practical. In theory the full principle of regality still obtains, but in practice the Crown through the British Museum either returns the finds or pays the full value of those retained. The owner of the soil does not come into the picture at all, but what does he matter in these days? H. J. RANDALL.

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A DICTIONARY OF ASSYRIAN CHEMISTRY AND GEOLOGY. By R. CAMPBELL THOMPSON. *Oxford: the Clarendon Press, 1936. pp. XLVIII, 266. 21s.*

Here is another example of collaboration between an Assyriologist and experts in other sciences. Oxford has already given us the fruits of collaboration in the matter of Law (Driver and Miles), in Astronomy (Langdon and Fotheringham), and now, in this volume, Dr Campbell Thompson allies his immense learning in the field of Assyriology with that of experts in the physical sciences at Oxford and elsewhere. The result is a very remarkable book; remarkable in what it attempts and in what it achieves.

The title does not convey the wealth of the contents of the volume. It is not only a dictionary but a historical dictionary; and the history is not merely Assyrian of the time of Ashurbanipal, the 7th century B.C. Assyrian king whose initiative in collecting and directing literary work has made all students of ancient Mesopotamian culture his debtors; it includes much that is earlier. Moreover it contains medical, magical and philological material drawn from many lands and cultures and languages.

The contention is startling: the Assyrians 'had a sound practical knowledge of simple chemicals'; they 'experimented with fire and acids on vegetables and minerals', and 'achieved astonishing and unexpected results', though we know little of the technical processes. The evidence is set down under such headings as: Salts, Chemical Earths, Arsenic Groups, Metals, Stones (Red, Blue, White, Green). There is an important discussion, with texts, of early glass making.

Dr Thompson would not claim certainty for all his conclusions. There is probably no argument against the chemistry and geology of the book, for the author has gone to experts in those sciences for advice. Nor is there any decisive argument, probably, against the philological comparisons with Semitic and non-Semitic words. But it is as well to follow the author's example and make liberal use of 'perhaps' and 'it might be', etc. His general contention is established: the Assyrians had the things and the experimental knowledge of the things; a knowledge attained scientifically and developed by necessities of crafts and medicine. The data set out in this book are of first importance for the 'cuneiform' specialist and for the historian of scientific achievement.

Here are a few additions to the material adduced in the book:

- p. 1. Salt and fish; cp. 2/3 (*še*) *šám mun-ḫa-ú-sa-še* (Drehem text; *Orientalis* 55, no. 47: 12). Another Drehem text has the, here irrelevant, phrase: 1 shekel of silver *ḫa-mun* (Lutz, Sumerian Temple Records, part II, no. 77: 1).
- p. 2. In point of fact, salt isn't much mentioned in Ur III.

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to allow the possibility of any direct survival through such an immensely long period of time. Dr Arne is non-committal, but hints that as the Ananjin tradition is still persisting at Barsoff a thousand years later, could it not already have been born a thousand or so years earlier? If such continuity can ever be proved, from Stone Age to early Medieval times, what a truly staggering example it will be of that innate conservatism of woman. J. J. HAWKES.

THE OLD TOWNS OF ENGLAND. By CLIVE ROUSE. *Batsford*, 1936.
pp. 120, 129 *illustrations*, 2 *maps.* 7s 6d.

It must be a task of extreme difficulty to compress into a clear picture the vast amount of information that is available about the old towns of England. On the one hand, there is a danger of over-generalization, and on the other there is the danger of producing a portmanteau full of a jumble of facts. Mr Clive Rouse has succeeded in finding a delightful compromise. After an introductory chapter, he has made his material manageable by dividing the variety of the English town into four categories—cathedral cities; market and country towns; ports and harbours; and, lastly, resorts and spas. 'Numerous overlapping exceptions' are inevitable, but, in each chapter, the main theme is quite clear. Quite sensibly, London has been excluded 'as being too vast in scope' for this volume.

The introductory chapter emphasizes the importance of an historical background in discussing English towns. But we might, perhaps, wish that a rather more formal treatment of town development had been given instead of the existing rambling account. That is soon forgotten. In the chapters that follow, historical detail is used again and again to make clear some feature of architecture or of plan. Full space, too, is given to the survival of traditions, ceremonies, fairs and markets. The chapter on cathedral cities, as might be expected, was not difficult to make attractive; all the time Mr Rouse has his eye not only on the cathedral itself but upon its relation to the city as a whole. But perhaps the most lovable of all towns is the little market town where today the 'farmer's ordinary' continues to be eaten at inns great and small. More exciting is the harbour town with its ship-chandler's shops. And what pages of history are opened by a chance old print in the window of an antique shop, showing Riverport as it was in the 1780's! Lastly, come the English watering places whose pump-rooms and crescents and Regency terraces represent a whole phase of English life and manners. 'Bath, of course, must stand supreme amongst this group'. This chapter seems the most successful in the book, maybe because the material available is more restricted and therefore more manageable.

Nothing need be said about the technical excellence of the illustrations beyond the fact that they are up to the usual Batsford standard.

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Throughout the book there is a constant plea for the safeguarding of the many treasures of the English town. As Mr Rouse is well aware, towns must 'move with the times'. But, too often, there is tragedy when the old is swept utterly away, and when evidences of the past 'are blotted out and forgotten'. We must remember that Progress and Preservation are by no means incompatible. It is one of the achievements of the Batsford books in general to have made us increasingly aware of the riches, both of country and town, to be found in these islands. And it is high praise to say that this volume does that as much as any.

H. C. DARBY.

ANCESTRAL PORTRAITURE IN ROME: and the art of the last century of the Republic. By DR ANNIE N. ZADOKS-JOSEPHUS JITTA. Allard Pierson Stichting Bijdragen I. *Amsterdam: Noord-Hollandsche Uitgevers-Mij*, 1932. pp. 119, 22 plates. No price stated.

This is the first publication made from the funds of a new foundation at Amsterdam University—the Allard Pierson Foundation. It has one serious defect for which the author is not responsible: nothing on the cover or the back gives the smallest indication of the contents. The back reads simply 'A.P.S.—Bijdragen I'. Since the work is a monograph, the title should take precedence in position on the back. I know that it is a common practice of Institutes in many lands to publish books under their auspices and at their expense and then suppress everything but their own name on the cover. This is an absurd practice that should stop. In effect it means that a student may take down twelve volumes of a series before he gets the one he wants.

This book is a meritorious, if rather amateurish piece of work. The author surveys Roman art of the last century of the Republic with freshness and some originality. She commences with a useful analysis of the use of masks for the dead in the Bronze Age. She collects all known instances and then does the same for the Classical period. She concludes that the use of masks in burials was an Aegean and Eastern custom imported by the Etruscans when they migrated to Italy. From them it reached the Romans. She interprets the famous passage of Polybius as meaning that the early Romans used masks of the dead persons at their funerals and placed them in the house after the ceremony. From this, as many other archaeologists have argued, came the life-like character and realism of Republican portraiture, different from the character-drawing realism of the Hellenistic portrait. Here the author is on well-known ground, though her general treatment of the subject is vigorous and gives us much additional knowledge. But she makes one contribution of great importance in clearly isolating a class of Roman Republican portrait which is demonstrably based on a *death mask* made from the corpse. Her demonstration consists of

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- p. 15. *ELTEG*. cp. *ELTEG-qum* (Or. 55, p. 34; three Umma, Ur III, tablets) together with the 'crushed powder' mentioned by Dr Thompson on p. 162. What is *ELTEG* in the frequent Ur III context: beer, bread, oil, onion, *ELTEG*? probably a food-stuff; impossibly an eye-wash? (the tablets all relate to people on journeys). *ELTEG.SI* occurs on damaged tablet, Ur III, Umma (Analecta Orientalia, 121:1).
- p. 46. *IM. GUŠKIN*. Add Drehem tablet (An. Orient. 7, no. 375:7; date broken).
- p. 58. *Guškin*. Odd that gold is so rarely mentioned on the masses of Ur III tablets. One of the earliest mentions occurs on a Nippur text, recently published, not later than Agade rule, described as 'Feldmiete(?)' (Pohl, 'Vorsargonische und Sargonische Wirtschaftstexte', 1935; no. 51).
- p. 59. *Guškin. HUS*. A; interesting and only (?) Ur III reference to red silver (*Kù HUS*. A; An. Orient. 7, no. 377:6, 9).
- p. 61. *Guškin. SI. SA*; an earlier mention at Nuzi (Meek, OASC. 215:3).
- p. 62: *kù lāh-ha* (cp. pre-sargonic, Pohl l.c. 78.1; 75:3).
- p. 63. note 1 cp. Deimel, 'Wirtschaftstexte aus Fara', nos. 30-37, and Pohl l.c. (Nippur), 71, 75 as payment for house. Remarkably frequent in early Fara and Nippur proper names. pp. 122-3, note 1 cp. 2/3 *gín kù za-gul* (on an unpublished Harvard tablet, Ur III). T. FISH.

BASKETWORK THROUGH THE AGES. By H. H. BOBART. Oxford University Press, 1936. pp. 174 and 86 figs. 12s 6d.

Mr Bobart has written an interesting popular book on baskets and basket-work in Ancient Egypt, Assyria and Babylon, Greece, Rome, of the Celts and Gauls, and has added Biblical references. The rest of the little book deals with what may be termed the folklore of basketry, the Basketmakers' Company, and other aspects of his subject. He has read widely and usually gives adequate references. The illustrations are apposite, but it seems unnecessary to have two of the hypothetical appearance of the wickerwork first church of Glastonbury. The sensational illustration of the 'Wickerwork of the Druids' is superfluous seeing that the author rightly dismisses it as improbable that the British druids sacrificed human beings. The ethnological references are slight, but this is a very wide aspect which is rather outside the author's scheme. One would, however, have liked a precise reference to the harvest festival of 'the natives of Borneo'. A pleasing reference is made to Professor T. Okey, who is quoted as saying: 'All the learned lucubrations in encyclopaedias relating to the Latin *bascauda* and supported by classic quotations from Martial and Juvenal, may be dismissed on the authority of the best lexicographers'. The author says: the

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'origin of the Middle-English word "basket", like the origin of the craft, seems lost in obscurity'; in this as in other disputed matters his attitude is strictly impartial.

A. C. HADDON.

BARSOFF GORODOK: ein westsibirisches Graberfeld aus der jüngeren Eisenzeit. By T. J. ARNE. *Stockholm: Kungl. Vitterhets Historie och Antikvitets*, 1936. pp. 96 and 34 plates.

The ancient settlement site of Barsoff Gorodok lies on the north bank of the Ob, 10 km. from Surgut. It was as long ago as 1891 that the Swedish scholar Dr Frederic Martin excavated an extensive cemetery of flat graves situated just west of the settlement, and obtained the material now fully published by Dr T. J. Arne. His work is excellently illustrated with photographs, and includes a complete inventory of the finds from all 111 excavated graves; further sections deal with external relationships, chronology, and racial problems. Individual plans of the great majority of the graves are missing, but as grave-groups have been scrupulously kept together little of scientific importance is lost.

Relying partly on the comparatively secure dating established by Kusnetsoff in his investigations of Kurgan graves in the Tomsk neighbourhood, and to some extent on A. Spitzyn's chronological grouping for the Kama region, Dr Arne assigns the Barsoff cemetery to the late 8th-11th centuries A.D. He is able to correct Spitzyn's dating in some respects, notably by the suggestion of an earlier date for the first appearance of filigree work in the area.

The bronzes can be divided roughly into three groups based on their distribution; the first, that includes the delightful broad flat armlets with bear designs, seems virtually to be limited to this West Siberian territory round the Ob and Irtysh; a second, which among other types numbers the elaborate ornaments with long-necked horses' heads and pendant chains, extends west of the Urals to the Kama region; while the third finds parallels still further west, across North Central Russia north of the Volga and reaching even as far as Swedish Lappland. This last group contains pendants of half-moon form, and stylized bird-images, executed in the round, with little hanging bells. Certain bronzes, and especially an annular ornament of entwined 'dragons', which have prototypes probably a thousand years older from the graves of Ananjinov, add to the existing evidence for the long survival of Scythic traditions in Asia.

This question of survival is of great interest in another direction: no British reader can fail to be struck by the great resemblance between the Barsoff pottery and the Baltic Stone Age and Russo-Finnish wares that we have come to link with our Neolithic B ceramic; this likeness is largely one of decoration, in form the Barsoff vessels suggest those of Fatjanovo. The same resemblances are noted by Talgren for the Ananjinov pottery, but he is unwilling

PLATE IV



A PRIMITIVE LATHE: THE MAN FOR WHOM THE BOWL IS BEING MADE SITS IN A PIT AND SUPPLIES THE POWER WITH TWO TREADLES (see p. 14)

THE BURUSHO OF HUNZA

these narrow planks placed side by side and pierced by horizontal holes through which two parallel rods are threaded ; the hinge is a longer piece of wood pointed at both ends and rotating into holes in threshold and lintel ; while the whole is secured by an ingenious wooden lock. Most villages, however, now possess a carpenter or two, trained in the P.W.D. workshop at Gilgit and armed with plane and saw, who can produce more Europeanized doors and cupboards, to the greater comfort of their owners and the selfish regret of the anthropologist. The old, home-made door is still in use for barn and byre.

Every peasant family is almost entirely self-supporting and independent, eating the produce of its own laboriously and beautifully terraced fields (PLATE I), wearing the woollen cloaks and caps spun and woven from the wool of its own sheep, and booted from the skin of its own beasts. The only foreign garments worn are the cotton shirts and trousers of comparatively recent introduction, now considered indispensable by both sexes, and the merry little cotton caps, plain or silk-embroidered, which have replaced the heavy woollen salvation-army bonnet of the women. Butter is made and water carried in skins ; grain and flour are carried in skin-bags or sacks and stored in skin-sacks or wooden bins. Rugs, saddlebags and ropes are woven of goat's hair.

In a country where no unirrigated tree can grow, timber is very scarce. An old apricot or appletree is sometimes available, or the root of an old vine, otherwise the only general timber is the poplar, grown primarily for poles and rafters, and the willow, absolutely essential for baskets (PLATE II), a dozen varieties of which are needed for carrying apricots, manure, dry leaves, straw etc., and for storing potatoes and dried fruit.

The soil of Hunza is unimaginably poor, consisting in fact of little but powdered-up mountain side. The scarcity of water means also the non-existence of pasture, and the few animals that can be fed eke out a spartan existence on the scraps of grass growing on the rare semi-irrigated strips of hillside or beside the water-channels, and on such weeds amongst the growing crops as are not earmarked for human consumption or remain after the crops have been reaped. This scanty provision is supplemented by the autumn harvest of dry leaves (not one of which lies on the ground ungarnered), the straw and stubble, and occasionally a small quantity of dried grass. Only a few families command enough land and water to grow a little lucerne for fodder. The most livestock that the average household of 10 to 20 persons

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hopes to possess is a tiny flock of 20 to 25 sheep, goats and cows. In these circumstances manure is more precious than gold, and the small children who conduct a cow to pasture carry a shoulder basket in which every ounce of the day's output is scrupulously collected and brought home.

When the snow retreats on the upper mountains a few patches of green are left here and there, and the more athletic beasts are taken up by young men who live in shelters with their charges, collect the manure, convert the milk into butter and bring these home with the animals when the snows claim their own again. These patches of high pasture, several thousand feet above the villages, are all too few and can only be reached by serious feats of mountaineering. Through field-glasses we could see the grazing animals clinging—by their eyebrows as it seemed—to their precipitous 'summer pastures', but it was impossible to ride up even on a yak, and at our age impossible to climb on foot for a nearer view.

As soon as the trees put out their leaves in spring, each 'donkey tree' (*i.e.*, non-fruit-bearing) is stripped of every scrap of spare foliage to feed the half-starved beasts. This luxury diet has to be very carefully administered lest the animals should perish of its unaccustomed succulence.

The major crops grown by the Hunza people for their own use are wheat, barley, several kinds of millet, sweet and bitter buckwheat, nowadays also the highly-valued potato (introduced by the British in 1892) and small quantities of various pulses. Barley must have been the original staple crop, for all the traditional festivals, the Seed-sowing of early spring, the First Reaping of early summer and the Harvest Home, relate to barley alone. The peasant is wise about rotation of crops and the various types of wheat, millet, etc., which thrive best in given conditions. Wheaten bread is much preferred to any other, but barley remains the larger crop because spring-sown barley ripens three or four weeks before even the winter-sown wheat, and the vacant fields can be resown with millet; whereas after the wheat only buckwheat can hope to ripen before winter. Bitter buckwheat is frankly detested, but it is hardier than the sweet and can better withstand an attack of early frost, so a certain amount of it is always sown as an insurance.

So poor is the soil, so scanty the manure, that in the newer villages like Aliabad, the average return is only sevenfold and even the storeyed fields of Baltit, which have been tilled in the sweat of man and woman's brow for at least 600 years and probably for twice or thrice as long, yield

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a miserable ten—none of your ‘some thirty, some sixty, some an hundredfold’—while lucerne only gives three crops.

The Hunzukuts’ main food is bread, of which the housewife makes a large variety, from the leavened wheaten cake with butter for feast days, the unleavened flapjack of wheat, barley or blended flours for everyday, to the bitter buckwheat scones of leaner times. Milk is not an article of diet; the animals yield little at the best and none at all when their own offspring is weaned. Such milk as there is contains little fat content, which is not to be wondered at in view of the food on which the animals exist; it is converted into butter, curds and such preservable forms. Butter is stored in birch-bark wrappings beneath an adjacent water-channel and broached only on festive occasions or for the entertainment of a guest. Meat is tasted at most twice or three times a year, at festivals or on some day of domestic rejoicing, a wedding or a birth, and then it will be ‘some tainted wether of the flock, meetest for death’, who supplies the sacrifice.

The womenfolk tend small vegetable plots in the corner of a field or separate garden, where carrots, turnips, marrows, gourds and half a hundred kinds of humble ‘greens’ are grown, and a few plants whose leaves or seeds are esteemed for flavouring, along with a few tobacco plants for the men’s pipes. After grain and greens, the essential item of Hunza diet is the apricot, fresh in the early summer and dried during the rest of the year; mulberries, fresh and dried, come next in importance, then a few apples, pears and peaches (these little valued because they will neither keep nor dry) and a few grapes for such relatively well-to-do houses as can afford space and water to grow them. Grapes ripen too late to be dried into raisins and the small quantity not consumed fresh is converted into light wine, brightening the winter days for those who have it, and drunk within a couple of months of manufacture. The apricot has yet further uses. Its kernel yields the oil which lights very modestly the winter nights. The Burusho woman is said to refuse, most wisely, to live above the level of the ripe apricot (say 9–10,000 feet). This is, I suspect only a base pretext of her husband’s for refusing to live at these altitudes himself. Be that as it may, the upper villages of Hunza are almost exclusively inhabited by immigrants from Wakhan accustomed to a treeless existence and a diet of barley only. Grafting fruit trees is an art thoroughly understood. The above-mentioned fruits supply the only sugar which the Hunza people know.

Despite all diligence in tilling the ungrateful soil, despite the utmost

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comparisons of some of her group with known and famous death-masks, notably that of Frederic the Great. It is indisputable that death-masks all have in common certain physical characteristics, such as the sinking of the cheek and the lengthening of the space between the nose and the mouth, which invariably happens after death. These characteristics she finds, in some cases startlingly emphasized, in what are meant to be portraits of the living. Quite possibly all these years we have conceived our general impression of the strong silent Republican Roman with his ascetic and grim figure, from a study of the faces of dead Romans. No wonder we tend to attribute to the Republic qualities of Catonian sternness and asceticism. If we have based our assumptions on the portraits of dead men we shall be bitterly deceived. I always doubted the truth of the old tag that 'dead men tell no tales'.

S.C.

ARABS OF CENTRAL IRAQ: their history, ethnology and physical characters. By HENRY FIELD, with introduction by SIR ARTHUR KEITH, F.R.S. *Anthropological Memoirs*, vol. IV. *Field Museum of Natural History*, Chicago, 1935. pp. 474, 156 plates, 48 figures, 3 maps. Price not stated.

Here at last is a comprehensive series of anthropological measurements of living Arabs (667) of Iraq, made by Mr Henry Field, Curator of Physical Anthropology at the Field Museum, during the winter of 1927-28 (Field Museum-Oxford University Joint Expedition to Kish). The subjects measured belong to three distinguishable groups: (a) settled agriculturalists of Kish, (b) wandering Beduin from between the Two Rivers, and (c) soldiers of local garrisons, recruited however from as far south as Basrah and as far north as Mosul, so that the results obtained have a wider connotation than the specialized area of origin would indicate. Yet the specialized area, scene of the ancient civilizations of Sumer and Babylon, could not have been better chosen for the comparison than is afforded by the data with skeletal remains recently excavated by archaeologists and ascribed to the 4th millennium B.C. The ancient inhabitant, it is of interest to note, had a much bigger head than the modern inhabitant (cranial capacity 100 ccs. bigger). The wider interest of Mr Field's work lies in the evidence it contributes to the problem of racial evolution in western Asia generally.

The central and major portion of the monograph is devoted to statistical tables (14 measurements and 23 other observations for each individual), the latter part to a set of 156 beautiful plates of Arab heads, a full-face and profile photograph of each subject, numbered to correspond with its appropriate table of measurements. Mr Field's analysis of his data is illustrated by graphs which show at a glance the whole complex of indices, both absolute and relative, for his three groups. In a lucid introduction of 74 pages, Sir Arthur Keith gives

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an exposition of these faces, facts and figures. Copious charts illustrate points of similarity or difference between one or other of the Iraq groups and groups of more-or-less related Egyptians, Somalis, South Arabians, Armenoids, Dravidians (Chitrals) or Aryo-Dravidians (Pathans). With these people the Arabs are shown to have the small head and, within variable limits, the dark pigmentation in common. A large number of the Arabs have the conspicuous nasal development common in Armenoids—a wide Caucasoid feature—but the brachycephalic form of Armenoid head, characterized by flattened occiput and the ear placed conspicuously far back in the head, was found but rarely among Kish Arabs, the tendency increasing among soldiers recruited in the north. Both the settled Arabs and the visiting Beduin were found to be dolichocephalic (C.I. 75.3 and 73.4 respectively). Racially, Mr Field considers them predominantly Mediterranean, but they are shown to be a 'highly differentiated race' with a 'marked tendency to variability'. This, after all, is scarcely surprising in a population having so mixed a racial inheritance—Sumerian, Babylonian, Cassite, Parthian, Mongol—with a strain of negro blood, perhaps, from an old usage of slavery and concubinage. The variability, however, shows features which Sir Arthur Keith regards as having evolutionary significance. The history of the tribes, such as the sub-title of the book leads the reader to expect, is not given in this volume (iv), and indeed, it seems doubtful whether such authentic fragments as are available of a society largely unlettered, would be a factor of weight in an ethnological survey of this kind, where so little existed before. Mr Field has done well to give us the anthropometric data he has. The absence of blood-tests (in his continued expedition of 1934 he even succeeded in accomplishing some work on these lines in Baghdad and elsewhere) does not detract from this valuable work, for it must not be forgotten that his subjects were superstitious believers in the evil eye, and suspicious alike of the means and ends of the investigator. The scope and the exhaustiveness of the material makes this pioneer contribution notable. Mr Field is to be congratulated on overcoming many obstacles, and in this monograph 'makes a royal gift to his fellow workers'.

BERTRAM THOMAS.

THE HERO: a study in tradition, myth and drama. By LORD RAGLAN.
Methuen, 1936. pp. 311. 10s 6d.

Lord Raglan is the owner of a one-track mind. In this wholly readable and well-written book he has driven his mental engine so hard along the single track that towards the end the rails seem worn to the sleepers. He is entertainingly outraged by every scholar of the last half century who has ever dared to suggest that ancient myths contain a kernel of truth. Whereas, he tells us, 'modern stories such as the *Pickwick Papers* are assumed to be fictitious unless

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edge of a well-defined *tunneltal* between Meiendorf and Ahrensburg, a few miles northeast of Hamburg (map, FIG. 3), at a point where borings had indicated the existence of such a silted-up basin in the immediate neighbourhood of a sandy hillock, on which flints typical of the Hamburg culture had previously been found (PLATE 1). By employing methods similar to those used in the English Fenland to effect archaeological-geological-palaeobotanical correlations (Clark, Godwin and Clifford, 1935) the excavator of the Meiendorf site, Alfred Rust, succeeded in realizing each of the aims outlined in an earlier paragraph. A full and well-illustrated account of the excavation has just appeared in the monograph *Das altsteinzeitliche rentierjäger-lager Meiendorf* (Karl Wachholtz, Neumünster: s. 146, Taf. 57, fig. 32: price 16 RM), the work of Rust in co-operation with the Hamburg scientists Karl Gripp (geology), Walter Krause (fauna) and Rudolph Schüttrumpf (palaeobotany).

The Meiendorf section (FIG. 4) gave the following sequence:— at the base varved sediments deposited in the melt-waters of a retreating ice-sheet, followed by $1\frac{1}{2}$ metres of calcareous mud (*kalkmudde*), a few centimetres of sand, *c.* 30 cms. of sedge-peat (*seggentorf*) with wood and tree-stumps, somewhat more than a metre of mud (*faulschlamm*), $\frac{3}{4}$ m. of reed peat (*shilftorf*) and at the top $1\frac{1}{4}$ m. of brushwood peat (*bruchwaldtorf*) with the stumps of alders. The scatter of archaeological material from the site on a neighbouring hillock was found to rest on the floor of the basin in the bottom of the calcareous mud. Schüttrumpf's palaeobotanical researches (1937) have shown that the vegetation contemporary with the base of the calcareous mud, and by consequence with the settlement of the Hamburg people, was of characteristic tundra type. The pollen diagram (FIG. 4) shows, it is true, the presence of birch, pine and willow pollen at this level in the section, but it can easily be proved that this tree pollen must have been blown in from a distance, from regions further south. For one thing it is significant that in the base of the section the pollen of grasses and herbs reached values greatly in excess of those for the forest trees, the frequency in one sample being over five times as great, which argues for open country. But the decisive evidence comes from a macroscopic study of the plant-remains from the same level. This showed that whereas there was no trace of the wood, the leaves or the fruits of the forest trees, the remains of characteristic tundra species—*Dryas octopetala*, *Salix polaris*, *S. reticulata*, *Betula nana* and various leafy mosses—occurred freely. The bone and antler material from the archaeological

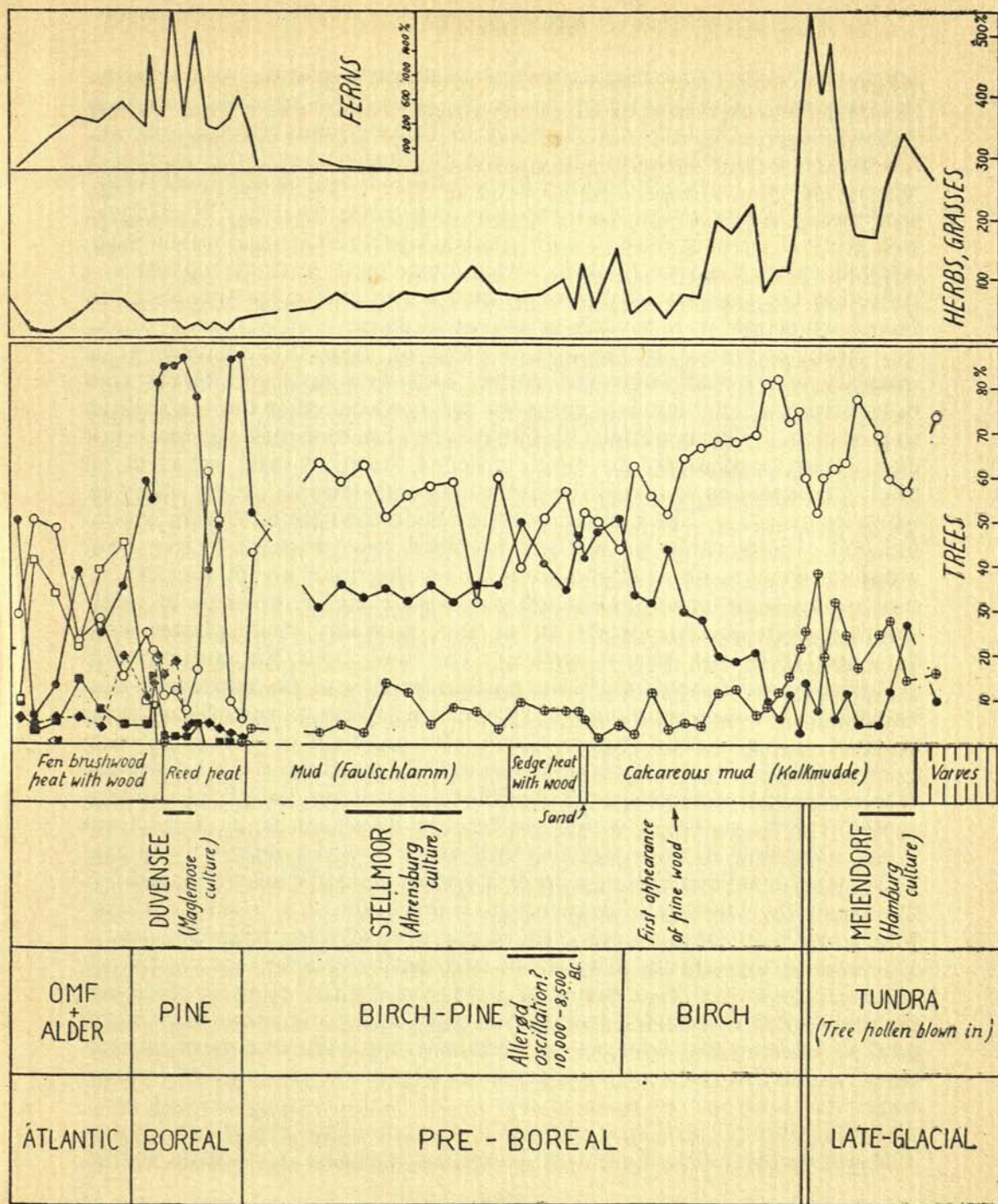


FIG. 4. THE MEIENDORF SECTION. (Based on Schürumpf).

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level can hardly be taken as giving a complete picture of the fauna contemporary with Hamburg man in the Meiendorf *tunneltal*; but it is significant that the only animal really well represented was the reindeer (71 individuals), which must have been his chief quarry in the hunt and which certainly provided him with a principal raw material for tool-making. Other species represented include horse, hare (sp. ?), badger, fox, glutton, white grouse (6 individuals), a gull and several water-birds—duck (3 sp.), geese (2 sp.), swan, crane and spotted moorhen—reflecting the existence of sheets of open water, and suggesting that the Hamburg people were fowlers as well as hunters.

From a purely archaeological point of view the recovery of a quantity of worked bone and antler, including finished objects and debris from which technical processes can be deduced, is of outstanding importance. The material chiefly favoured for tool-making was reindeer antler, particularly the tough antler of the adult male, which is so finely preserved as to reveal the finest cuts and striae as clearly today as when first made. The method used to obtain the splinters, from which finished objects could be worked, involved two processes: first, two incisions were made at slight intervals on the inner arc of the antler, converging at either end, although parallel for the greater part of their length, up to 90 cm. (PLATE II, 1) and, secondly, the splinter was detached from the parent antler. The tool used for making the preliminary incisions through the hard outer core of the antler was the flint burin, whose abundance (c. 18 per cent. of the worked flints) thus receives a reasonable explanation. The method of loosening the splinter defined by the burin incisions varied according to the toughness of the antler: sometimes it was possible to prize it out directly by driving in wedges (the marks of which can be seen on PLATE II, 2), but often it was necessary to undercut the hard outer layer by boring away the underlying cancellous tissue, a process almost certainly accomplished by the use of the 'pronged' implements (*zinken*) (cf. FIG. 1, nos. 13, 14), which made up some 21 per cent. of the worked flints from the site.

Among the objects made from such antler splinters (PLATE III, 1) are a 'harpoon' with one row of barbs (PLATE III, 2) and a double-pointed object of circular section (no. 3). The former may have been used in hunting the reindeer—it certainly 'fits' the oval perforations found in several reindeer shoulder-blades from the site, and the latter almost certainly served as an arrow-tip for bird-shooting, tallying well with the wounds to be seen in some of the crane and ptarmigan bones. The use of three pieces of hook-like form (PLATE III, 4, 7) with, at the

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lower end of the shank, oblique slots for the inseting of flint flakes (no. 7 was found with the flint in position) is problematical, although Rust believes them to have been used for delicate leather-cutting. Whatever the truth of this, it is certain that leather must have been a valuable by-product of hunting, and it was doubtless in preparing skins that many of the numerous flint scrapers (forming some 25 per cent. of the worked flints) were used.

Bone objects include one-edged knives (flensing knives?) made from reindeer ribs, and various objects of unknown use made from the wing-bones of geese (PLATE III, 5) and swan.

Finally, one should mention a thin amber plaque (incidentally the earliest known instance of the use of this substance) perforated through the middle, its surface covered by faint scorings, which serve to obscure a faintly incised—and it must be confessed somewhat spiritless—outline of an animal's head and neck (no. 6). In style the engraving reminds one more of the cervids on the well-known Maglemose antler-haft from Ystad, south Sweden (Clark, 1936, fig. 61, no. 6), than of anything from the Upper Palaeolithic cave deposits of central or of western Europe.

In considering the affinities of the Meiendorf people it is essential that full weight be given to the nature of the site. It is known from the faunal evidence (Krause, 1937, 48-9) that Meiendorf was occupied only during the summer months: it is the site of a summer camp of a small group of reindeer hunters, typical in all likelihood of hundreds placed at different times on the shores of lakes and ponds in the *tunneltäler* of north Germany. Thus the Hamburg people can be regarded as the earliest inhabitants of north Germany only in a very limited sense; in reality they were summer visitors who followed the reindeer northward on their seasonal migrations, but dwelt for the greater part of the year in regions further south. It would be premature to define the geographical range of the culture, but its flint components have been found on surface-sites as far west as Elspeet and Oosterwalde in Holland (Popping, 1931 and 1932),¹ reindeer antlers showing traces of the Meiendorf 'splinter' technique are recorded from Late Glacial deposits at Popelken and Kulm in east Prussia (Gaerte, 1926 and Gross, 1937c), and the reindeer hunter's camp of Schussenquelle in Swabia with its antler 'splinter' technique (Schmidt, 1912, taf. xxiv, 8 a and b), its flint *zinken* and its harpoon barbed on one edge extends the distribution to

¹ Many surface sites have now been recognized in Hannover and Oldenburg, from Meppen in the west to Gifhorn in the east, and Stade and Cuxhaven in the north. A site has also turned up in the neighbourhood of Rendsburg (Schwabedissen, 1937).

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south Germany. The Schussenquelle site yielded remains of 400-500 reindeer, as well as arctic fox, glutton, and a small ox (musk ox?). The archaeological level overlay a late glacial moraine and was associated with a moss, often referred to as 'Arctic', but in reality of little diagnostic value; however, from the absence of tree pollen Karl Bertsch felt safe in deducing that the contemporary vegetation was in fact of tundra type (Bertsch, 1929, pp. 6-7). No exact analogy can be drawn between the Meiendorf material and that from any of the numerous caves of south Germany. Comparisons between the Meiendorf summer camp material and that derived from caves and rock-shelter 'homes' may to some extent be vitiated by the different status of the sites. Nevertheless it remains significant that neither the antler, bone nor flint-work can be matched at all closely from any of the German 'Magdalenian' cave stations published by Schmidt (1912) and later writers. It is for this reason difficult to accept Herr Rust's attribution (1937, 135-6) of the Hamburg culture to the Magdalenian. The Hamburgian is best regarded as a self-standing culture the precise origin of which remains at present uncertain. The Meiendorf harpoon with its reversed barb near the base, though it points forward to Mesolithic forms (Clark, 1936, fig. 41, nos. 9 and 12a) differs from anything found in the Magdalenian. The shouldered points, on the other hand, are at home in the Gravettian cultures of Central Europe (*e.g.*, Willendorf) and of south Russia (*e.g.*, Gagarino) (Zamiatnine, 1934, figs. 17 and 18), although neither region can show parallels for the antler and bone work.²

Having established the geological and palaeobotanical context of the Hamburg culture and having recovered some at least of its organic components, Rust determined to do the same for Schwantes' Ahrensburg culture. The site selected was near the Hof Stellmoor in the same *tunneltal* as Meiendorf, but a few miles nearer Ahrensburg, at a point where a hillock strewn with Ahrensburg flints overhung a basin filled with Late Glacial and Postglacial muds and peats.

The Stellmoor excavation, on which only preliminary notes have yet been published (Rust, 1936a and b; Schütrumpf, 1935), proved a truly brilliant success: not only was a well-defined Ahrensburg level located and many of the perishable parts of the culture recovered, but its stratigraphical relationship to the Hamburg culture was definitely

² I am indebted to Miss D. A. E. Garrod for her opinion on the Upper Palaeolithic affinities of the Hamburgian.

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fixed by the discovery of the Upper Palaeolithic level some three metres deeper.

The Meiendorf and Stellmoor sections agree closely both as to gross stratigraphy and as to the development of vegetation, revealed by pollen-analysis and by the macroscopic study of plant remains. It is thus possible to indicate accurately the position of the Ahrensburg culture in the key Meiendorf section illustrated by FIG. 4. From this section it will be seen that deposits dating from the pre-Boreal and separating the pine-dominated Boreal from the Late Glacial tundra period are especially well developed. Now these deposits are of the liveliest interest, because it is from such that one might hope to obtain material to bridge the gap between the Hamburg Upper Palaeolithic and the Maglemose Forest Culture (represented locally by the site of Duvensee—see the section), and, in fact, it is to the latter half of this pre-Boreal period that the Ahrensburg culture has been found to belong.

According to Schütrumpf the forest history of the pre-Boreal falls into two main phases—a period of birch-dominated forests following the tundra, and a period of birch-pine forests initiated by a strong, and only partly maintained, advance of the pine. The existence of this marked rise in pine values in the middle of the pre-Boreal—a rise more definitely marked in the Stellmoor diagram (Schütrumpf, 1935, abb. 1) and in both sections coincident with a layer of sedge-peat—has suggested to Schütrumpf the existence of a climatic oscillation. The fact of such an oscillation was first proved by the discovery in a brick-field at Allerød, in northeast Zealand, of a peat-mud layer containing the remains of big-leaved birches, and separating two clay layers producing such species as *Dryas octopetala*, *Salix polaris* and *Betula nana*, and it has since been proved at over thirty sites in the area from Holstein and Jutland to Scania and Bornholm (Nordmann, 1936, 207). Schütrumpf regards it as likely, although not fully proved, that the sedge-peat layer in the Ahrensburg *tunneltal* correlates with the warm Allerød oscillation. Further east, in east Prussia, Gross has found traces of a similar oscillation, which he does not hesitate to synchronize with the Danish Allerød (Gross, 1937c). In his sections he found traces not only of a marked advance of the pine, but also of a subsequent tendency to a return of tundra vegetation, reflected in a temporary increase in the quantity of non-tree pollen. The only archaeological find at present referable to the Allerød period, which Gross dates to 10,000–8,500 B.C. (Gross, 1937c), is a point made from elk bone, some 30 cms. long, of oval to circular section and provided with a double-bevelled base for

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hafting, obtained from a peat-mud layer between two sub-arctic clay-beds near Gumbinnen, east Prussia (Gross, 1937b).

The Ahrensburg level revealed by the Stellmoor excavations occurred in the lower part of the mud (*faulschlamm*) deposit overlying the sedge-peat, tentatively assigned to the period of the Allerød oscillation. The pollen diagram shows at the Ahrensburg level high values for birch and pine with willows playing a modest role. Although fairly high values are attained by non-tree pollen, the existence of wood fragments shows that the tree pollen, in part at least, reflects the composition of forests actually growing in the *tunneltal* at this time. As at Meiendorf the animal remains, obtained at Stellmoor in great profusion, reflect above all the waste material from animals killed for food. The reindeer is once more by far the commonest species, being represented by over 1300 antlers and 'innumerable' bones. Other species include elk (one shoulder blade), horse, wolf, fox, lynx, hare, lemming, marten, beaver, swan, goose, crow, duck and ptarmigan. The assemblage as a whole should be compared with that from Hohle Stein, Westphalia (mentioned in an earlier paragraph), of which the leading features were the dominance of the reindeer and associated species and the presence, in smaller proportions, of a certain number of forest types.

The cultural material obtained in the excavations included over 1000 worked flints with all the leading Ahrensburg forms, known previously from Hohle Stein and from the numerous surface-sites of north Germany, as well as many objects made from bone and antler, and, lastly, some very precious wooden pieces. Technically the antler-work betrays a complete break from the preceding Hamburg culture, the splinter technique being entirely absent. The forms are also distinct. Harpoons occur, but they differ in shape from the Meiendorf specimen. The first of those illustrated (PLATE IV, 1-3) has long been familiar by stray finds from the Havel lakes and clay deposits of Brandenburg, published by Stimming (1925, abb. 84-93) and often wrongly ascribed (*e.g.* Clark, 1936, 117) to the Maglemose culture. But by far the most significant antler objects from Stellmoor are the 25 reindeer antler-axes and adzes of pure 'Lyngby' type—nearly twice as many as were hitherto known from stray finds over all the plain of northern Europe. At one stroke the famous 'Lyngby' axes, which, culturally disembodied, nevertheless represented almost the sole trace of man for the whole pre-Boreal period in the north, are proved to be part of the equipment of the same people who made these tanged flake flint industries, which gave Schwantes his first clue and led directly to

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the Stellmoor excavations. A feature to be noted on one of the Stellmoor axes is the series of cuts, some of them grouped in fours and fives, placed in a line on the upper surface of the handle (PLATE IV, 4a). The wooden objects are also of outstanding interest. The commonest are pine-wood arrow-shafts, ranging from $\frac{1}{2}$ to 1 cm. in diameter and reaching 73 cms. in length, of which over a hundred broken and complete specimens were found. They occur in two main classes, one intended to be inset with a flint point, the other complete in itself. Some of the variations assumed by the tips of the former group are illustrated by FIG. 5, nos. 1-3. It may be mentioned that specimens

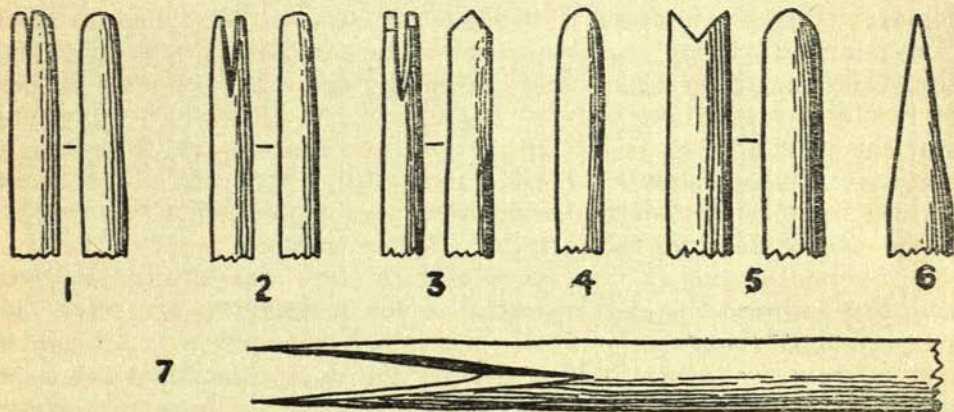


FIG. 5. WOODEN ARROW-SHAFTS FROM STELLMOOR, AHRENSBURG
nos. 1-6, varieties of tip; nos. 1-3, split or forked for the insertion of tanged flint points
no. 7, lower end of a normal shaft, showing nick for engaging bow-string. Scale $\frac{1}{4}$
(After Rust)

resembling nos. 1 and 2 have each been found with the tangs of flint points still in position, while one like no. 3 was discovered in a reindeer's breast complete with its tanged flint point of characteristic Ahrensburg form. Variants of the latter group are shown by nos. 4-6 on the same illustration. A specimen of the no. 4 type was found sticking in a dorsal vertebra of a wolf. Although the head of the shafts was treated in so many different ways the base was invariably provided with a nick for engaging the bow-string (no. 7). No complete bow has been found—only two uncertain fragments—but that this formed a principal weapon of the Ahrensburg people is beyond dispute. The existence of such fragmentary remains of the wooden component of an Early Mesolithic culture serves to remind one of a serious lacuna in our

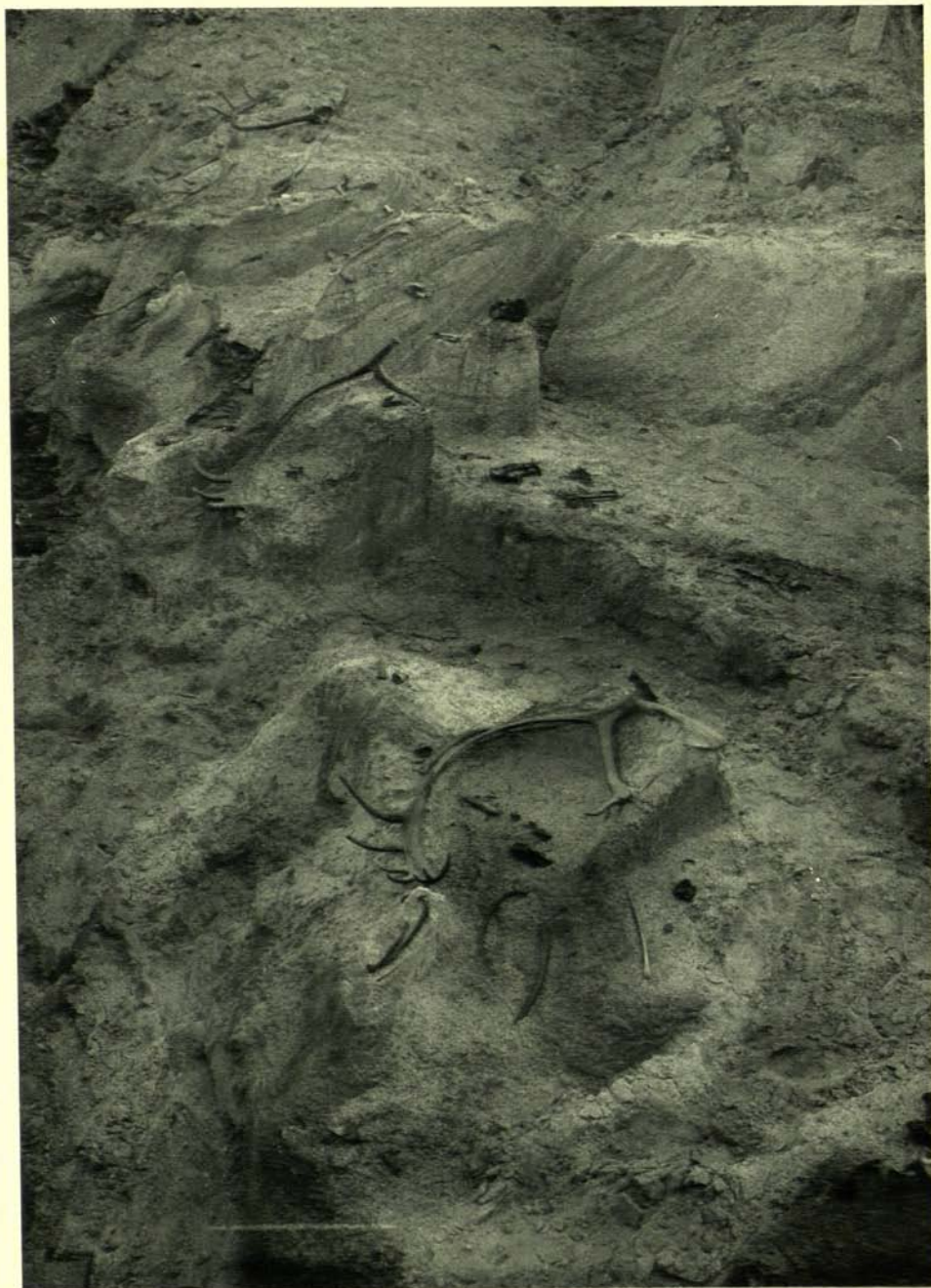
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knowledge of the Upper Palaeolithic cultures. Despite the fact that they must often have had to obtain the material from a distance, there can be little doubt that the Upper Palaeolithic peoples of western and central Europe utilized wood, and, indeed, a wood technique is implicit in such a 'type fossil' as the split-base bone point of the 'Middle Aurignacian'.

Thanks to the Stellmoor excavations it is possible already to indicate with some precision the geographical distribution of the Ahrensburg culture (map, FIG. 2). To the sites with characteristic 'Ahrensburg' flint industries, already known to exist within the Westphalian-Holstein-Silesian triangle, can now be added the 'Lyngby' reindeer antler axes, recorded from Jutland, the Danish islands of Fyen, Samsö and Zealand, from south Sweden, and from north Germany from Haltern in Westphalia to Schleswig-Holstein, the Havel lakes of Brandenburg (where they are reinforced by Stimming's harpoons), and the new find at Mitteldorf, kr. Mohrungen, in east Prussia. A further extension eastwards may be implied by some bone objects from a contemporary deposit at Abschruten, kr. Pilkallen, east Prussia, but typologically these are indeterminate (Gross, 1937c).

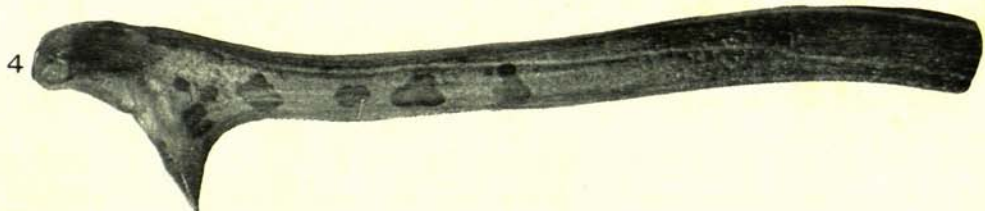
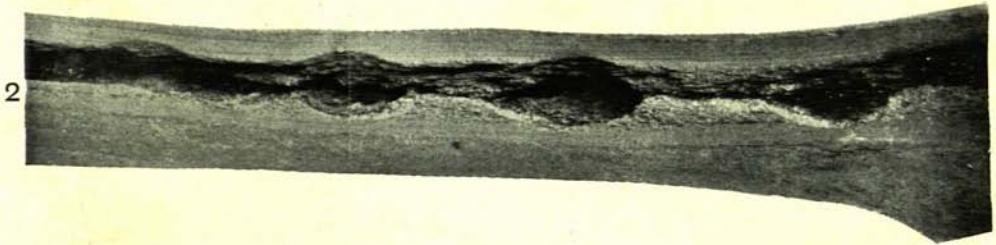
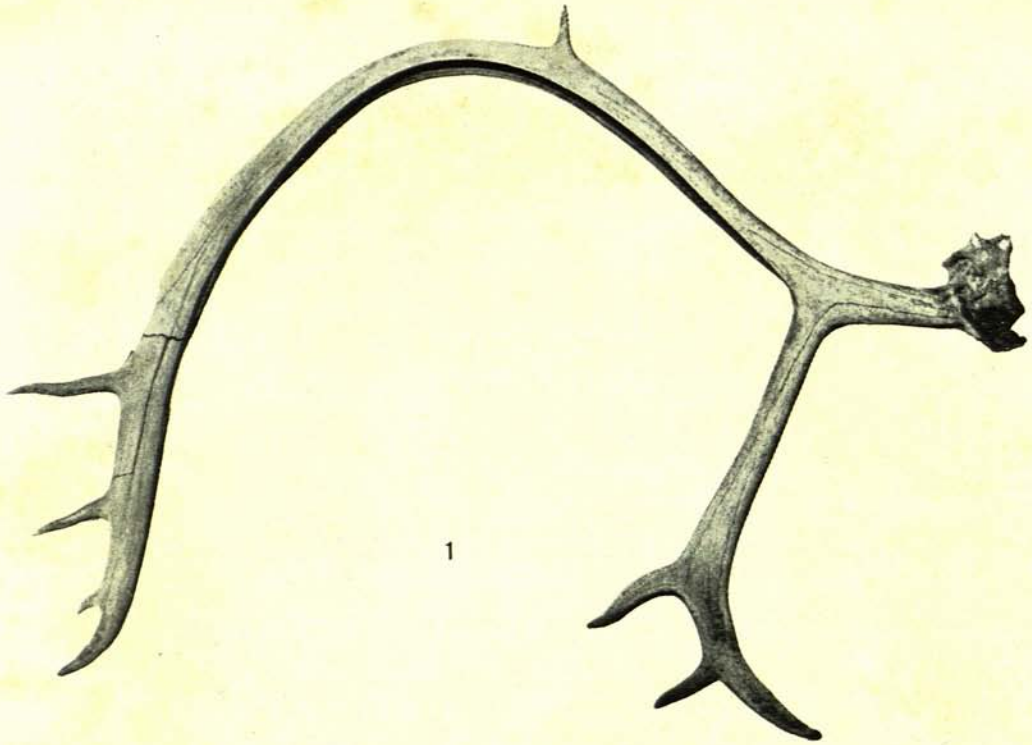
The full significance of the Meiendorf and Stellmoor excavations is difficult to estimate at this short distance of time, but one broad fact stands out clearly: they have bridged what was previously a gap in European prehistory by linking the Mesolithic forest cultures to those of the Upper Palaeolithic tundra. In particular the new finds throw further light on the origins of the Boreal (Maglemose) forest culture. It has been realized for some time that the roots of this virile culture must have been composite. Three main strains are to be distinguished (Clark, 1936, 131):—a microlithic element, which has been ascribed to penetration of the northern area by the 'Tardenoisian' culture in an early stage of development, a heavy element (antler, bone, stone and flint axes, adzes and clubs) reflecting adaptation to forest conditions, and lastly certain reminiscences from the old Upper Palaeolithic tradition (burins, 'harpoons', art). Schwantes (1925) has argued persuasively for the origin of the heavy element in reindeer antler prototypes, and the discovery of the 'Lyngby' antler types in their true natural and cultural contexts has gone far to substantiate his original contention. Moreover, the discovery of an Upper Palaeolithic antecedent in the heart of the Ahrensburg and Maglemose culture areas has provided a mechanism, whereby elements from an Upper Palaeolithic tradition as assumed by the present writer (Clark, 1936, 132) may

PLATE I



MEIENDORF: REINDEER ANTLERS AND BONES IN POSITION
ON THE 'FLOOR' OF THE POND

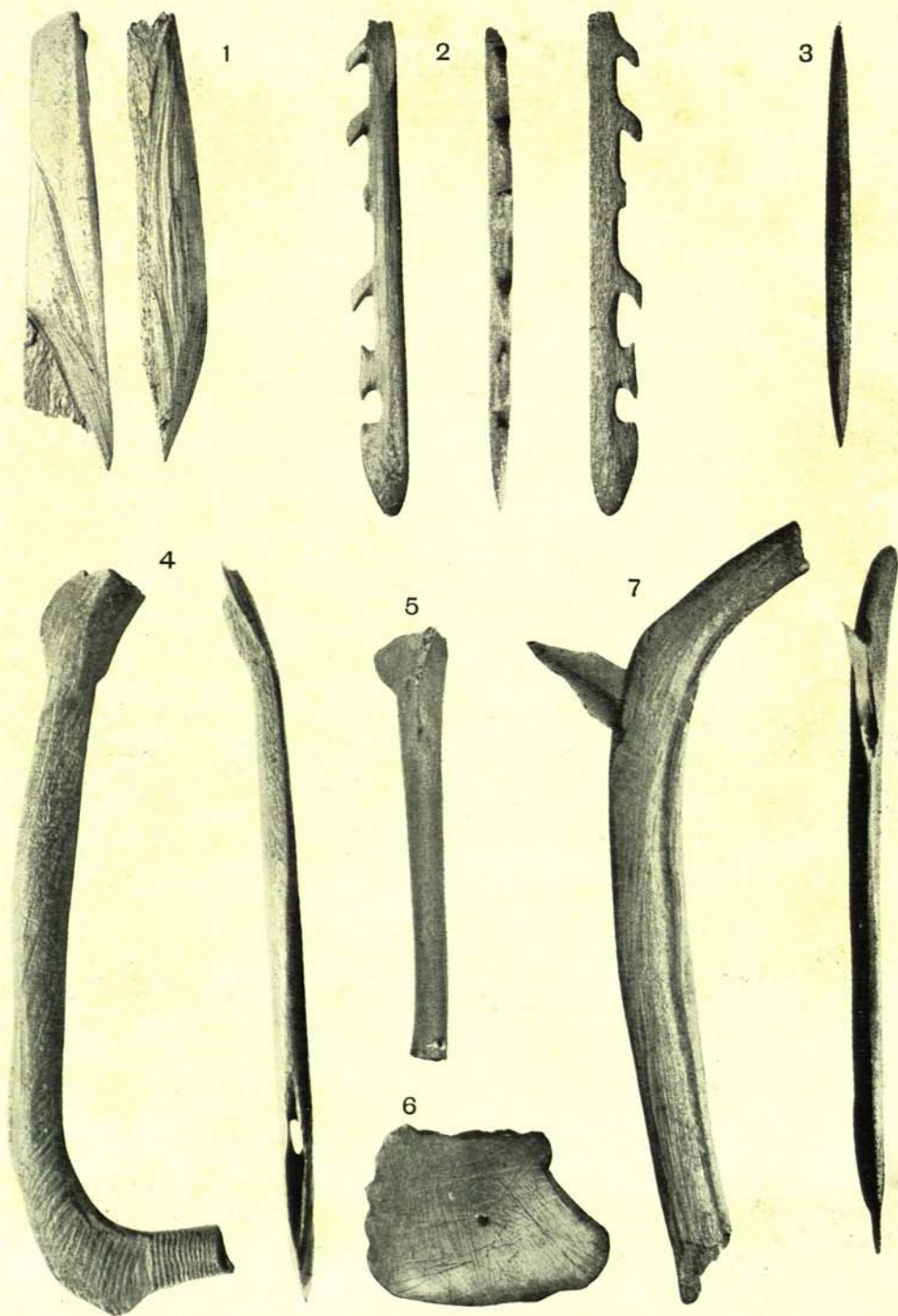
PLATE II



1. Reindeer antler: from the inner side a long splinter has been detached. (*After Rust*).
2. Burin-cuts and marks caused by implements in detaching splinters. (*After Rust*).
3. Reindeer antler haft from Nørre-Lyngby, Denmark.
4. Reindeer antler axe from Odense, Fünen, Denmark.

(*National Museum, Copenhagen*)

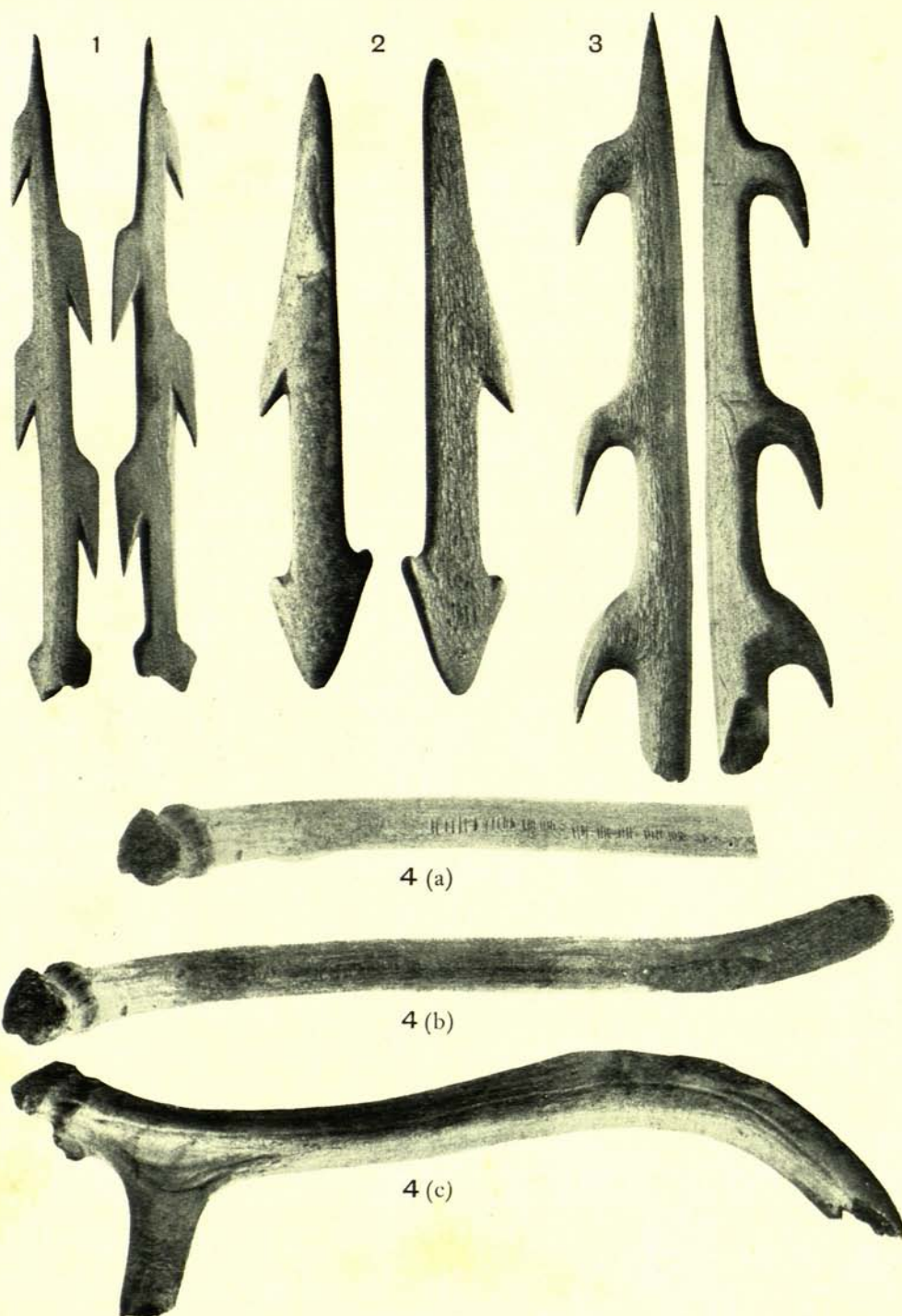
PLATE III



LEADING HAMBURG REINDEER ANTLER AND BONE TYPES

1. Part of reindeer antler splinter (*span*).
2. 'Harpoon' of antler.
3. Double-ended point.
4. Leather-cutting (?) tool; flint blade missing.
5. Worked wing-bone of goose.
6. Engraving of animal's head, amber plaque.
7. Leather-cutting tool. (*After Rust*).

PLATE IV



LEADING REINDEER TYPES, AHRENSBURG CULTURE, FROM STELLMOOR EXCAVATION
 1-3. 'Harpoon' forms. 4 (a-c). So-called 'Lyngby' type of axe (incisions on the back of handle, 4a). (*After Rust*).

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have been incorporated in the mesolithic of the region, although from what was said above (p. 164) the identification of these influences with the Magdalenian must be discounted.

To view the new finds in a broader perspective it may be worth recalling the theory, advanced by Sollas (1915, 485 ff.), of some ultimate connexion between the European cave cultures and those of the Eskimo. The human skeletal evidence used by Sollas cannot be checked by finds from north Germany, but many of the features of material culture on which he relied are common also to the Hamburg culture, and it is perhaps in this connexion worth noting a significant fact about the reindeer from the Ahrensburg *tunnel*. According to Gripp (1937b, 62-72) the Meiendorf reindeer belonged not to the *Rangifer tarandus* race, found at the present day in north Scandinavia, but to Jacobi's *R. arcticus* now living in eastern Asia and North America. It is possible, although this is yet a mere speculation, that some of the reindeer-hunting tribes of the north European tundra of between ten and twenty thousand years ago may have moved north and east as the tundra belt receded in post-glacial times. A further fact worth mentioning is that the closest modern parallels for the 'Lyngby' antler types are to be found in North America, where early pioneers from Europe found the Cree Indians of Saskatchewan and other Indian tribes using very similar objects made from the same material (Clark, 1936, 84). An example of the variety slotted for the insertion of a blade from the Kenai peninsula, Alaska, and now in Copenhagen Museum may be compared with a similar piece from Odense, Denmark, in the same museum (PLATE II, 3). It is, however, likely that any connexion found by future research to subsist between the two areas will prove to be of the most indirect kind. A leading authority on the archaeology of the Eskimo (Mathiassen, 1936, p. 127) has recently declared his belief that the home of the Eskimo should be sought in Alaska and Siberia: the intervals of time and space are sufficiently vast to encourage the hope that excavations at different points across the expanse of northern Eurasia may yet provide links between the Upper Palaeolithic and Mesolithic cultures of northern Europe and the still living cultures of the 'waste lands' of North America.

In conclusion, one may be excused for expressing the hope that the brilliant achievements of Professor Gustav Schwantes and his pupil, Dr Alfred Rust, may inspire comparable efforts in Britain. To suggest that the search for Upper Palaeolithic and Early Mesolithic open stations, now directed almost exclusively to glacial and low-lying valley

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deposits in eastern England, might with advantage be shifted elsewhere, may seem at the moment ungracious to many earnest workers, but in the long run it is likely to yield results more complete in themselves and at smaller cost. It may well happen that the palaeo-botanists by locating Late Glacial and pre-Boreal plant deposits will give us the first clue, though any hints from quaternary geologists as to where such deposits might be expected to occur would be more than welcome. Finds of reindeer antlers and bones in such deposits might soon lead to the discovery of the summer camps of the reindeer-hunting tribes of Britain. It is by such finds that we can hope to recover those elements of the Creswellian culture (like the Hamburgian itself, an off-shoot from the Gravettian), inevitably either absent from or poorly represented in the caves and rock-shelters from which it is known at the present time. And it is through such finds in silted-up lakes by the ancient ice-margin that we can hope to establish a finer chronology for our Upper Palaeolithic and early Mesolithic cultures.

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The Churches of Palestine and their Influence on Early Christian Architecture*

by ALFONS MARIA SCHNEIDER

THE churches of the Holy Land play a very special part in the lengthy controversies as to the origin and formation of the Christian basilica, since particular significance is attributed to them as constituting a norm from which the basilica type developed. For example, Wulff remarks:¹ 'If any region anywhere played a leading part in the development of the early Christian basilica, it is Palestine, including the whole coast of Syria to Philistia, where, under Constantine the Great, building was already developed with the express purpose of fostering the cult in the holy places'. This view, illuminating in and for itself, is today generally accepted; it cannot, however, be maintained against the result of recent excavations. In this article chief emphasis is laid on the churches of Constantine, which are of especial importance not only because of their age, but in particular because they stand on the most sacred places of Christendom.

According to Eusebius (*Vit. Const.*, 3, 25-43, 48-53), the first Christian emperor and his mother Helena between them built four churches (1) the Church of the Sepulchre at Jerusalem; (2) the Church of the Nativity at Bethlehem; (3) the Eleona Church on the Mount of Olives, and (4) the Shrine of Mambre at Hebron. At the present day we have satisfactory knowledge of the last three, but of the Church of the Sepulchre we unfortunately still know too little.

THE CHURCH OF THE SEPULCHRE

It would be foolish to attempt to add yet another to the 25 already existing reconstructions of Constantine's lay-out; that would make confusion worse confounded.² Only the excavator's spade can bring certainty; let us hope that it will soon be achieved. My FIG. 1 is

* Translated by Professor R. G. Austin.

¹ *Altchristliche und Byzantinische Kunst* (Potsdam, 1914), 205 f.

² See Vincent-Abel, *Jérusalem nouvelle* (Paris, 1914).

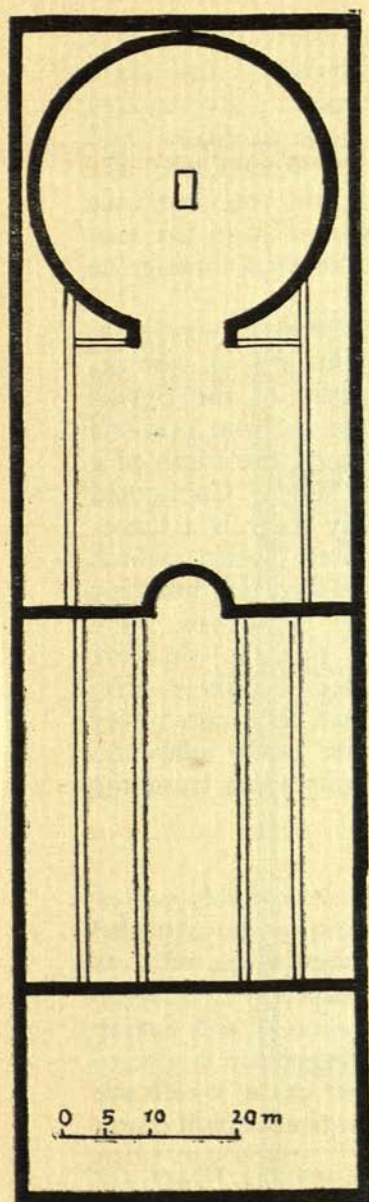


FIG. 1. CHURCH OF THE SEPULCHRE,
JERUSALEM

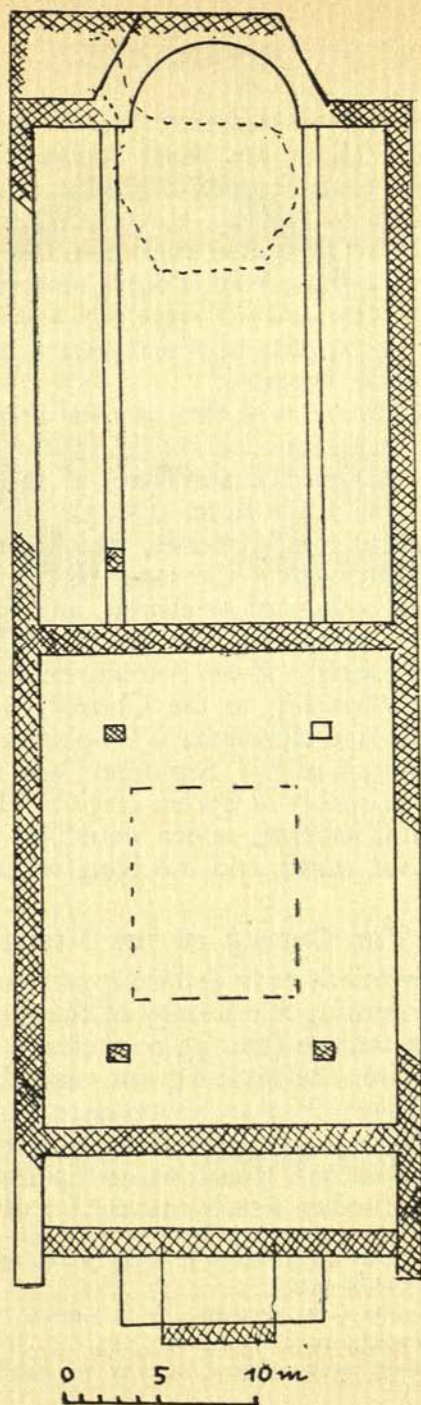


FIG. 2. ELEONA CHURCH, MOUNT OF OLIVES

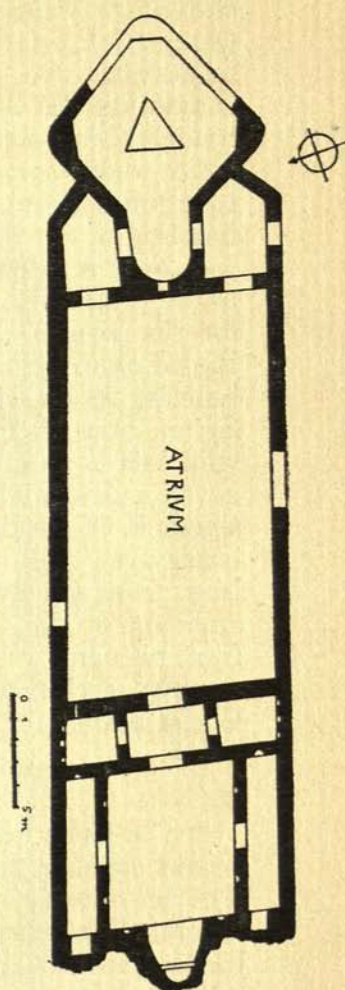


FIG. 3. SHRINE OF HADAD,
ROME

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therefore only a provisional sketch, to explain the accounts of Eusebius and other writers. There are three separate divisions: the tomb (Anastasis), a domed chamber with twelve inner supports; a courtyard or atrium, lying open to the sky, surrounded by three porticoes, and containing the rock of Golgotha (not mentioned by Eusebius); the basilica (Martyrion), a five-naved, double-storeyed hall, with entrance court which opened towards the west and was entered from the east by a propylaeum, the remains of which were found in 1898 during the building of the Russian hospice.

Now it might appear as if this unusual arrangement is simply to be explained from topographical considerations; but that is not so, for the lay-out shows marked similarity to the shrine of the Syrian Hadad on the Janiculan hill in Rome (FIG. 3).³ There we have a central building as the Hall of the Mysteries, which contained the tomb of a Syrian Sun-God, identified at the same time with Aion. Connected with this is an open courtyard or atrium, and finally there is a three-naved cult-chamber containing the image of Jupiter Syrius, which stands in an apsidal conch. It can scarcely be denied that this building bears very close relationship to the Church of the Sepulchre. We learn from the Byzantine chronicler Theophanes (I, 33 de B.) that the architect of the Church of the Sepulchre was called Zenobius, who from his name was probably of Syrian origin. He had then taken over a native architectural scheme, which could be quite easily adapted: Christ is the true *Sol salutis*, and the King of Eternity risen from the grave.

THE CHURCH OF THE NATIVITY

The latest excavations have definitely and quite remarkably solved an old problem concerning the history of the building of the church.⁴ The lay-out of Constantine (FIG. 4), now clearly recognizable, with its octagonal chamber over the mystic grotto, and the adjacent five-naved basilica, is nothing more than an abbreviated adaptation of the Syrian scheme, from which, as we saw, the Church of the Sepulchre is also to be derived. Both churches, therefore, are specialized cases, which are not decisive for the further development of ecclesiastical architecture,

³ P. Gauckler, *Le sanctuaire syrien du Janicule* (Paris, 1912), and F. J. Dölger, *Der heilige Fisch* (Münster, 1922), 182.

⁴ Vincent-Abel, *Bethléème, le sanctuaire de la nativité* (Paris, 1914); Richmond, *Quart. Dpt. Antiquit. Palest.*, 1935, 75 f., 1936, 63 f.; Vincent, *Rev. Biblique*, 1936, 544 f.; Harvey, *Structural survey of the Church of the Nativity at Bethlehem* (London, 1936).

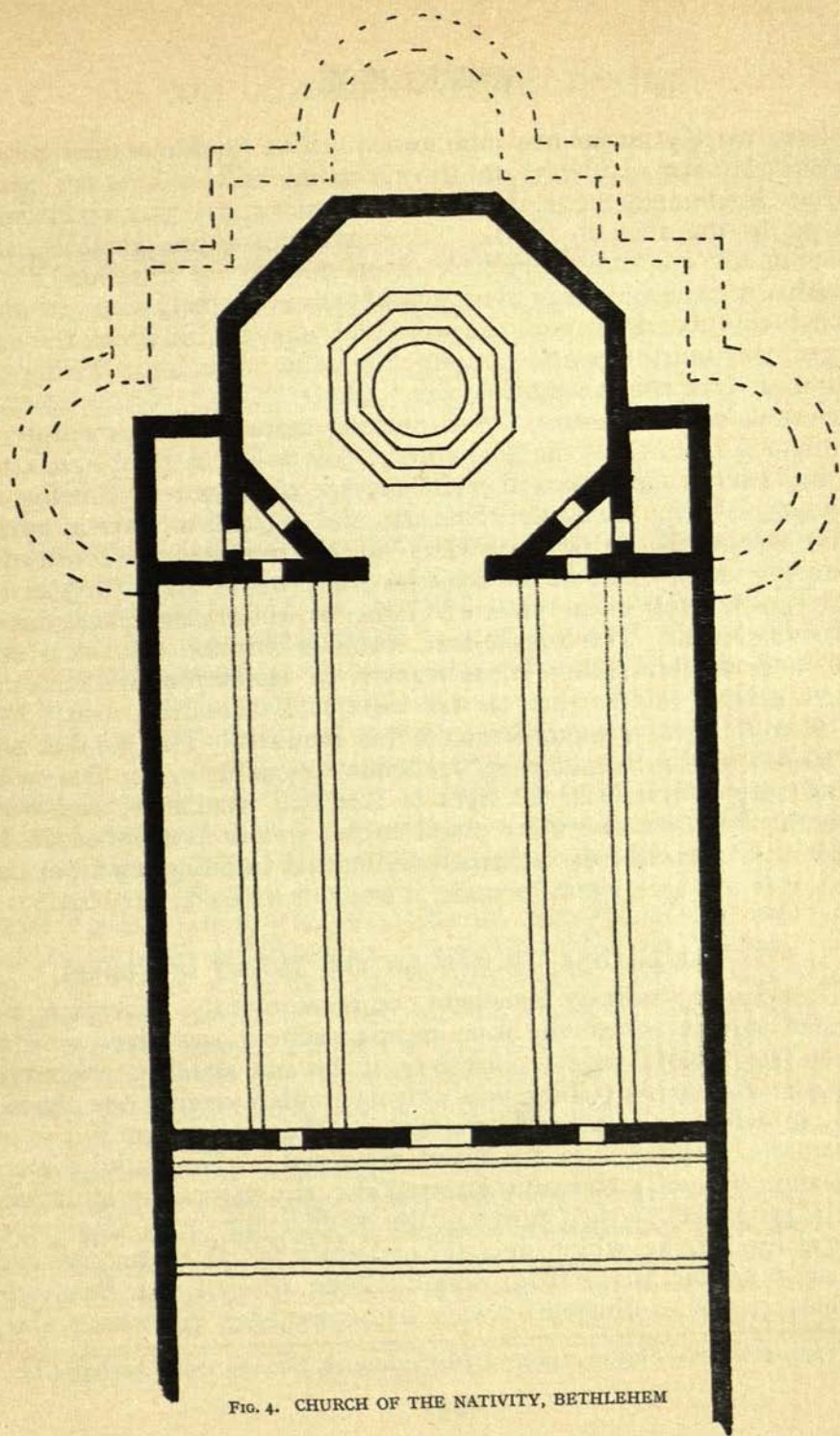


FIG. 4. CHURCH OF THE NATIVITY, BETHLEHEM

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but have merely an *ad hoc* significance. The fundamentally Syrian-syncretic lay-out may have something to do with the reason why it was only used in one other place, so far as I know, and that, significantly enough, in the Church of the Tomb of Constantine at Byzantium. Unfortunately we know very little about the plan of this church; we can only say for certain that there was a basilica, at the east end of which rose the rotunda containing the tomb of Constantine, in which he rested as the thirteenth apostle among the other twelve. Weinreich's researches⁵ into the question of the 'thirteenth god' first showed us Constantine's real meaning: it is nothing more than a substitute for the pagan apotheosis of the Emperors. Just as the ancient hero could join the twelve Gods and thereby receive the dignity of being the thirteenth—Philip, Alexander, Hadrian, and Septimius Severus, among others, became the 'thirteenth God' in this manner—so Constantine set himself at the head of the apostles; one might almost say in fact that he put himself in the place of Christ, to whom alone that position properly belongs. This symbolism, which is only too plain, was after regarded as inadmissible; consequently the cenotaphs of the twelve apostles disappeared as early as the time of Constantius, who turned the 'Heroon' into a mausoleum for his dynasty. The parallel with the Church of the Sepulchre in Jerusalem seems to me in this case a striking one, especially in the light of Eusebius' statement that round the tomb of Christ also there stood twelve pillars as symbols of the Apostles. Otherwise, the scheme of a central building with adjacent basilica was not used again, because it was nowhere else appropriate.

THE ELEONA CHURCH ON THE MOUNT OF OLIVES

This church, built by Helena to commemorate the Ascension, was excavated shortly before the war, and an account was given of it by Vincent (*Rev. Bibl.*, 1911). However, it did not stand on the actual site of the Ascension (which was only later discovered), but above a grotto, in which, according to Eusebius, 'the Saviour of the world initiated the Apostles into the secret mysteries'. Naturally, there is no question here of a biblically-attested site, any more than is the case with the grotto below the Church of the Multiplying of the Loaves and Fishes at Et-Tabgha, which since the end of the fourth century has been considered as the place from which Christ uttered the Beatitudes (Matthew 5, 3 ff.) Grottoes always had something mysterious about

⁵ *Triskaidekadische Studien*, 1916, 3 f. (*Religionsgesch. Versuche und Vorarbeiten* 16, 1).

THE CHURCHES OF PALESTINE

them for the ancients : consider the part they play in Pausanias (*e.g.*, x, 32, 2 ff.), and later in the Neoplatonists. Unfortunately little is left of the Eleona Church, only the ground-plan, and that is not certain in all respects (FIG. 2). The lay-out is about 60 m. long and 22 m. wide ; it contains a three-naved basilica, the shape of whose eastern end cannot be determined (it was possibly round or rectangular), and a rather deeply set atrium with a propylaeum. As in the case of the older church at Bethlehem, there was no narthex. Thus the building has no important special characteristics, but is to be regarded as an unimportant variant of the basilica type.

THE SHRINE OF MAMBRE AT HEBRON

We know from Eusebius, Sozomenus (*Hist. Eccl.* 2, 4), and others, that Constantine built a church 'in mercato Terebinthi', in honour of Abraham, on the site of a syncretic cult-place. It was destroyed by the Persians in 614, and then rebuilt in a poor sort of way by Modestus, but fell into decay after the conquest of Palestine by the Arabs, and ultimately became completely forgotten. Recent archaeologists searched for it in all sorts of places round Hebron, until in 1918 E. A. Mader, in his book *Altchristliche Basiliken und Lokaltraditionen in Südjudaä*, decided in favour of a position some three km. north of Hebron, surrounded in the manner of a temenos by a circle of large, carefully-hewn stones, measuring 65 by 49 metres. This place was called Harām rāmet el khalil = 'place of the Height of the Friend (God)'; it had naturally long been known to travellers, but was regarded at different times as Idumaeon, Jewish, Byzantine or Arabian. It was not until Mader undertook his excavations in 1926⁶ that a complete solution of the various problems became available. It was then established that the eastern half of the temenos, belonging to the period of Hadrian (FIG. 5, the part in black), was covered by a remarkable structure, which is undoubtedly to be identified with Constantine's church. The lay-out is abnormal in several ways : it is as broad as it is long, it has a narthex which is laterally extended in a curious manner, and on the northeast and southeast side there are adjacent two almost square rooms, which may probably be regarded as sacristies or as the lodging of the pilgrims' priest. This unusual arrangement can be easily explained from topographical considerations ; as it was desired to use the western half of the temenos area as a market-place, the church

⁶ *Rivista di Arch. Crist.* 1929, vi, 249 f.

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Corn-spurrey (*Spergula arvensis*) was cultivated in the Iron Age, as it is today, for fodder.⁵ Over a gallon of the carbonized seeds were found on the floor of a burnt house at Ginderup. Woad (*Isatis tinctoria*) was likewise cultivated in the Roman Iron Age for its blue dye.⁶ It seems to have been known in south and west Europe earlier than in central Europe, and was cultivated in Scandinavia as late as the beginning of the 19th century.

Flax first appears in the pre-Roman Iron Age—a little earlier than Sarauw's lists indicated—and was certainly cultivated in the 1st century A.D.⁷ Isolated finds of linen from the Neolithic and Late Bronze Ages were probably imported and not manufactured locally.

Altogether, the state of agriculture in northern Jutland during the Roman Iron Age was scarcely inferior to that of the beginning of the 19th century.

The story of agriculture in Denmark did not begin with the cultivation of native plants, but with the introduction of wheat and barley, and the principles of cultivation were afterwards applied to the native plants. While the pottery found in the shell-mounds of the non-agricultural Ertebølle folk shows no impressions of the seeds of corn or other cultivated plants, there is evidence that wheat and barley reached Denmark before the earliest megalithic culture. This evidence consists in the impressions of Emmer wheat and naked barley on two specimens of Neolithic pottery of pre-megalithic type. Curiously enough, of the two principal cultural elements that go to make up the Danish Neolithic—the megalithic folk and the battle-axe (or single grave) folk—the former cultivated little else but wheat, while the latter grew exclusively barley.

The probable ultimate source of cultivated wheat and barley is the Near East. Vavilov's⁸ botanical researches indicate a mountainous country as the scene of the first cultivation of the wild prototypes of wheat: he classifies these in three groups, each with its centre of diffusion—(1) a group which includes Common wheat and Dwarf wheat, in Turkestan, Afghanistan and northwest India; (2) a group including Emmer, in Abyssinia; and (3) a group including Einkorn, in Asia Minor. Similarly he regards one group of barley-forms, mainly the husked kinds, as having its centre of diffusion in Abyssinia, and another, mainly the naked kinds, in the Himalayas and neighbouring parts of

⁵ *ibid.* p. 53.

⁶ *ibid.* pp. 22-4.

⁷ *ibid.* pp. 54-7.

⁸ See the article on 'The Origin of Cultivated Plants' by A. E. Watkins in *ANTIQUITY*, 1933, VII, 73-80.

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China. Both groups include two-rowed and six-rowed forms. The early European varieties doubtless derive from the northeast African centre.

Oats first appear in central Europe and Denmark during the Bronze Age, and the Romans learnt to know it from the Celts and Germans. The cultivation of oats has probably arisen in different places at different times ; originally it appears to have been a weed in Emmer wheat, and being the hardier of the two it was better able to stand the climate of northern latitudes.

Rye first appears in central Europe at the end of the Bronze Age and beginning of the Iron Age, and, like oats, was originally a weed in wheat and barley fields, spreading, according to Vavilov, from diffusion-centres in Asia Minor, Persia and Armenia. The rigors of a northern climate gave to rye also an advantage over wheat, as in the case of oats, so that it gradually became an independent cultivated plant. This may have been promoted by the ancient habit of sowing two or more different crops in the same field together, in order to insure against failure of one of them.⁹

The earliest cultivation of flax took place in north Africa and southwest Asia, and it is to the latter group that the European forms belong, having a distribution over north India, Afghanistan and Bokhara.

DOMESTICATED ANIMALS

The bones of animals found in Mesolithic settlement sites of the Mullerup culture (say, 6000 B.C.) show that man was dependent for his living on wild animals such as the red deer, roedeer, elk, urus, wild boar, beaver, badger, pinemarten, wild cat, fox and hedgehog, and on such birds as the grey duck, grebe, shoveller (*Anas clypeata*), coot, crane, cormorant, sea-eagle, and black stork. The only domesticated animal at this period is the dog, of which two kinds can be recognized, a large and a small. Later on, in the Ertebølle middens, dog-bones are common, and the bones of other animals show marks of gnawing by dogs. According to Herluf Winge the domesticated dog reached Denmark from the south, and was not developed locally but from the wild jackal such as is found in southeast Europe, Asia Minor and north Africa. Others consider that the Mullerup dog was derived from the wolf, or else from a cross between the wolf and a dog which was

⁹ This custom is referred to in Leviticus, XIX, 19.

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originally a domesticated jackal.¹⁰ The earliest uses of the dog were for hunting, for guarding the house, and for food.

The domestic ox, pig, sheep and goat first appear in Denmark at the beginning of the Neolithic period, simultaneously with wheat and barley, and must have been introduced from the south. There was thus no purely pastoral stage preceding cultivation. In spite of many contrary opinions, which are based on misunderstandings of the evidence, there is no ground for believing that any domestic animals, except the dog, were known in Denmark before the arrival of agriculture at the beginning of the Neolithic period, nor is there any reason to think that local wild animals, such as deer, had been in any sense domesticated.

The Neolithic and Bronze Age sheep¹¹ was a small 'goat-horned' variety, which is known from pictured representations of the 3rd millennium B.C. in Babylon. It is believed to have been domesticated in Turkestan about 6000 B.C. or rather later. The Neolithic goat belongs to a species which still lives in Crete¹² and is widely distributed in western Asia.

The domestic pig is derived from the wild boar which is native to Europe, north Asia and north Africa, and though its domestication could have taken place locally its sudden appearance in Denmark simultaneously with other domestic animals, and with all its characteristics fully developed, points to its having been introduced from elsewhere. Pigs are not good at travelling, and are therefore not much kept by nomadic peoples, but are essentially proper to settled farming communities. The similarity between wild boars and domestic pigs was greatest in the Neolithic period, since when there has been increasing divergence.

As to the origin of the domestic ox there is as yet no final agreement. It seems likely that at least two main groups are involved, derived from two principal sources: (1) to one of these groups belong the long-horned, broad-browed varieties, represented at the present day by the Scottish Highland cattle, and derived, no doubt, from the Urus (*Bos primigenius*) which was widely distributed in Europe, north Africa and the Near East; (2) to the other belong the short-horned varieties with long and narrow foreheads (*Bos brachyceros*), of which the

¹⁰ See the article on 'Dogs' by Max Hilzheimer in *ANTIQUITY*, 1932, VI, 411-9. See also *Proc. Prehist. Soc.*, 1938, 469-70.

¹¹ See the article on 'Sheep' by Max Hilzheimer in *ANTIQUITY*, 1936, X, 195-206.

¹² See *ANTIQUITY*, 1938, XII, 81 and photo.

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ultimate source is uncertain, but of which the domestication presumably took place in Europe north of the Alps, or in western Asia. Both of these groups are represented among the cattle of the Danish Neolithic period.¹³ Oxen were used for food and, at any rate from the Late Bronze Age, for ploughing; presumably milk and cheese were also obtained for food, though this is not easy to prove. Certain perforated vessels, with one large additional opening in the centre, are looked upon as cheese-strainers.¹⁴

The origin of the domesticated horse is also rather uncertain.¹⁵ It is usual to postulate two main groups: (1) the 'oriental', or light, 'warm-blooded' horse with short head; and (2) the 'occidental', or heavy, 'cold-blooded' horse with long head. The first group includes the Arab horse, and is probably the older, while the second group is especially characteristic of the Baltic countries. The domestication of the horse most probably took place in the grass-lands of south Russia, where the Tarpan is still found. The domesticated horse seems not to have reached Denmark in the megalithic period,¹⁶ though it may have been introduced by the battle-axe (single grave) folk; it is common in the Bronze and Iron Ages. It was certainly used for food, and in the Bronze Age it was harnessed to carts, while during the Iron Age it was used, first for drawing war-chariots, and later for riding and hunting. The horse had no special connexion with agriculture, but rather with fighting and with religious cults, and seems to have been an object of sacrifice.

Poultry and cats appear first in the Roman Iron Age.

AGRICULTURAL IMPLEMENTS

Did the Neolithic Danes use a plough drawn by animal labour, or was cultivation done with hoes and digging-sticks? Does the simultaneous arrival of corn and cattle imply that the latter were used for cultivating the ground? Professor Hatt admits that there is no evidence to answer the first question, and he sees no reason to accept the validity

¹³ In Britain the long-horned group is as characteristic of the Neolithic, as the short-horned group is of the Early Iron Age.

¹⁴ A British specimen of the same type from Kingley Vale, Sussex, is illustrated in the present writer's *Archaeology of Sussex* (1937), p. 200, fig. 56.

¹⁵ See the article on the 'Horse' by Max Hilzheimer in *ANTIQUITY*, 1935, ix, 133-9.

¹⁶ The horse seems also to have been unknown to the British Neolithic A folk in southern England. It is noteworthy that it did not reach Egypt till the Hyksos period (1780-1580 B.C.).

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of the inference in the second. After all, corn and cattle were but two parallel methods of food-production, not necessarily inter-related in the way suggested.¹⁷

The study of early ploughs is largely based on the work of Professor Hatt's assistant, Axel Steensberg.¹⁸ Instruments which we call 'ploughs' are classified in two more or less distinct groups, the *ard*, and the plough (properly speaking). *Ard* is an old Scandinavian word for the light, two-ox plough, without mould-board or wheels, and may be cognate with the Latin *aratrum* and its congeners. 'Plough' is a Teutonic word which is strictly applicable only to the heavy implement with mould-board and wheels, which, as we shall see, may well have been invented within the area where Teutonic languages are spoken.

The *ard* may be of two forms: the crook-*ard*, which is essentially an enormous hoe made out of a forked branch, dragged through the ground by the oxen, and steadied by the application of a stilt; and the spade-*ard*, in which the stilt and share-beam are of one piece, shaped like a kind of spade or digging-stick, and dragged through the ground by the pole, to the hinder end of which it is firmly attached. Both types can be traced to Mediterranean lands, where the *ard* is still in common use,¹⁹ and both are depicted on the Swedish rock-carvings. Such an instrument, as Steensberg aptly says, is rather like a harrow with one tooth.

The ancient ploughs of northwest Europe are nearly all *ards* of one type or the other. A crook-*ard* found in peat at Walle in Hanover has been dated on the ground of pollen-analysis to 3500 B.C., but as the peat-specimens were not taken from the plough itself, but from the bog at the level at which the peat-cutter said it had been found—three months after the event—this conclusion is worth very little.²⁰ Part of a spade-*ard* found in a bog at Svarvarbo in Sweden was similarly dated by pollen-analysis to the Early Bronze Age, and here again the specimen of peat examined was taken from the bog at a level pointed out by the finder thirteen years after its discovery—a circumstance which totally invalidates the conclusions drawn from the analysis.

¹⁷ See the article on 'The Origin and Early Diffusion of the Traction-plough' by C. W. Bishop in *ANTIQUITY*, 1936, x, 261-81.

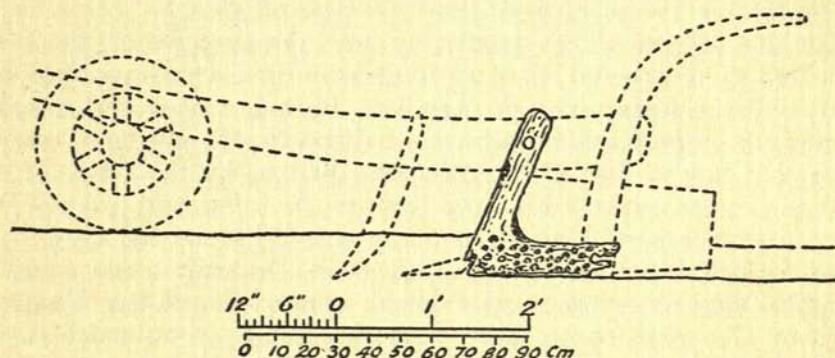
¹⁸ *Acta Archaeologica*, vii, 244-280.

¹⁹ Perhaps these two types correspond to Hesiod's ἄροτρον αὐτόγυνον and ἄροτρον πηκτόν (*Works and Days*, 433).

²⁰ An amusing sidelight on the alleged antiquity of this plough is contained in the title of the original publication: 'Die älteste Pflug der Welt: in Deutschland' (*Natur und Volk*, 1934, LXIV, 83-91).

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A perfect specimen of a spade-*ard* found many years ago in a bog at Døstrup in Jutland (PLATE 1) has recently been re-examined by Professor Knud Jessen, who found peat adhering to a crack in the wood, thus indicating its contemporaneity with the implement. Pollen-analysis of this peat indicated a date about the beginning of the pre-Roman Iron Age (say, 400 B.C.), which is a perfectly reasonable conclusion. The pole is a naturally curved piece of birch or alder which has been trimmed so as to be quadrilateral in section. At the fore end a wooden hook has been inserted for the attachment of the ox-yoke. The hinder, down-curved end of the pole is relatively heavy and is pierced by a square hole through which goes the lower end of the stilt,



PROVISIONAL RECONSTRUCTION OF FRAGMENT OF MOULD-BOARD PLOUGH DATED BY POLLEN-ANALYSIS TO THE BEGINNING OF THE PRE-ROMAN IRON AGE
(after Steensberg)

which forms the share-beam. In a groove along the upper side of the latter lies a small piece of wood which may have served as a kind of plough-share, to bear the brunt of the wear and tear during ploughing. Iron plough-shares seem to be unknown in the Danish pre-Roman Iron Age, and a piece of wood like this could be much more easily replaced, when worn out, than the share-beam itself.

More surprising are the results of the recent pollen-analysis of a fragment of a mould-board plough found some years ago at Tømmerby in Denmark.²¹ This v-shaped fragment, cut from a forked beech-branch, formed part of the share-beam of a form of heavy plough with mould-board and, almost certainly, wheels, which survived in Denmark down to the beginning of last century (see FIG.). The left side is protected by the insertion of a number of pebbles into holes drilled for the

²¹ *Aarbøger for nordisk Oldkyndighed*, 1936, 130-144; French summary, xviii-xix.

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purpose ; these take the brunt of the wear during ploughing, and their absence on the right side indicates the former existence of a mould-board. The deep scarfing of the joint for the attachment to the beam indicates that the latter must have been so thick that wheels would be required to bear its weight. At the point of the share-beam is a hole for the insertion of a tanged share, probably of wood, and no doubt similar to a specimen found at Borris in Jutland (PLATE I). Three specimens of peat found in crevices on both sides of the surviving fragment of this plough all yielded on pollen-analysis the consistent conclusion that the implement found its way into the bog at the beginning of the pre-Roman Iron Age—a considerably earlier date than any hitherto known evidence regarding this type of plough.

On due reflection this conclusion need not surprise us, for it tends to confirm the suspicion, that we in Britain have for some time entertained, that the heavy plough may have been invented and developed in Teutonic or perhaps Scandinavian districts, for we have reason to believe that it was first introduced into Britain by the semi-Teutonic Belgae in the 1st century B.C., and that its use was made general by the Teutonic invaders of the 5th century A.D.²² It would therefore be natural to look for its first development in Teutonic areas some time before the 1st century B.C., so that the appearance of the Tømmerby plough in Denmark some three centuries earlier is no more than we need expect.

Professor Hatt correlates the appearance of a heavy plough at that time with the onset of wetter climatic conditions, for he points out that the *ard* is suited only to light, dry soils, while the mould-board plough is specially suited for breaking up heavy, wet soils and thick turf.

Steensberg discusses the forms of ploughshares and coulters that have been found, and describes an undated oak share from Borris in Jutland, two feet long, consisting of a conical head about 6 in. long and 3 in. wide, with a tang of rectangular section a little more than an inch across (PLATE I). The marks of wear show that a mould-board was used. He also discusses early historical references to ploughs, but as the passages quoted from Anglo-Saxon and Old Norse books are not translated they are incomprehensible to the ordinary reader. Finally a considerable number of medieval illustrations of ploughing scenes in England, Denmark, northern France and Germany, are reproduced and described—a very valuable collection. It is remarkable that out of

²² *Antiq. Journ.*, 1933, XIII, 455-463.

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nine implements depicted as possessing wheels, a coulter and a massive ploughshare, only one shows a mould-board in use, whereas of four ploughs showing a mould-board and coulter, only one has wheels. Moreover, the wheeled ploughs are depicted as drawn by two oxen in three instances, by four oxen in one case, and by a team of two oxen and two horses in another. (The use of horses for ploughing begins to appear in Denmark in the 15th century). Never is a larger plough-team than four beasts shown. We have always considered that the English open-field system with its long, narrow acres was based on the use of a heavy plough possessing wheels, coulter, broad ploughshare, mould-board, and a team of eight oxen, the whole complex having been brought into general use by the Angles and Saxons. There seems very little doubt that this picture of the early English plough is correct in theory, for the division of the hide into eight bovates is alone enough to show that for purposes of assessment and communal ploughing the plough was supposed to be drawn by eight oxen.²³ But whether the theory was always put into practice is entirely a different matter, and the illustrations collected by Steensberg strongly suggest that it was not. The absence of a mould-board on an otherwise typical heavy plough does not seem to the present writer to justify the term 'wheel-ard', as Steensberg calls them. One such 'wheel-ard', without coulter or mould-board—a Swedish specimen dating from about 1800—is preserved at Copenhagen, and does, perhaps, deserve this name, as it is clearly a hybrid between a plough and an ard, the latter implement still being seen occasionally in use in parts of Scandinavia.

Wooden spades and shovels have also been found in Danish bogs, dating from the Migration Period, about the 5th century A.D., and in particular several large wooden rakes, of which the best preserved has a shaft nearly 7 ft. long, and a crosspiece 2 ft. 3 in. long, in which are set twelve wooden teeth, each about 10 in. in length.

The next most important agricultural implement after the plough is the sickle. The Danish crescentic flint blades are too well known to need much description, but it may be emphasized here that they differ from the British curved sickles in that the former taper to a point at each end, while the latter have a blunt butt or tang at one end. These differences clearly reflect different methods of hafting, and Oldeberg has suggested that the Scandinavian blades must have been hafted in a groove in a curved wooden mount, like the composite flint sickles of

²³ F. Seebohm, *The English Village Community* (1915), 60-6.

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Mediterranean lands.²⁴ Actual wooden mounts belonging to this type do not seem to have survived.

The method of mounting the British type is made equally clear by the discovery of a flint sickle, complete with its wooden handle, at Stenild in Jutland²⁵ (PLATE II). The flint in this case is admittedly an almost unworked flake, not a carefully worked blade like the British specimens, but the method of mounting must have been the same. The blade, which is $4\frac{1}{4}$ in. long and has its exposed parts covered with brilliant corn-gloss,²⁶ is set in a socket at right angles to the distal end of the wooden haft, and is given extra rigidity by a projection of the latter which supports the back of the blade for $1\frac{1}{4}$ inches. The wooden handle is 14.2 in. long, and the available cutting edge of the blade as mounted is about 3 inches long. A set of ten similar sickle-blades (PLATE II), all blunted by use and showing the characteristic corn-gloss, with lengths varying from $4\frac{3}{4}$ to 6 in., was found together at Freltofte in Funen and should stimulate us to look out for similar sickle-blades in Britain; the type is, in fact, beginning to be recognized here.

There is some division of opinion as to whether the crescentic flint blades were actually used as sickles or as 'leaf-knives', *i.e.* bill-hooks or slashers for cutting leaves and twigs of deciduous trees for winter fodder for cattle—an old method of foddering cattle in Scandinavia, and in Italy, according to Cato. Such a usage should produce diffuse gloss on the blades, like that from corn-straw. The National Museum at Copenhagen possesses over a thousand of these crescentic blades, which are seldom found in graves, but usually in dwelling-sites or in hoards which are sometimes regarded as possibly having been deposited as offerings to the gods.

Similarly the bronze sickles—which bear a very close resemblance to those of the Alpine lake-dwellings—are much commoner than in Britain; the National Museum has over a hundred specimens as contrasted with the 25 flat, and 14 socketed, bronze sickles known from the whole of Britain.

In the Iron Age we begin to find differentiation of form between sickles and scythes. One hoard from Vimose, dating from the Migration Period, consisted of three iron sickles and a scythe-blade, one of the

²⁴ *Acta Archaeologica*, 1932, III, 209-30.

²⁵ Original description by Chr. Blinkenberg in *Aarbøger for nord. Oldk.*, 1898, 141-56.

²⁶ See ANTIQUITY, 1930, IV, 184-6; 1935, IX, 64-5.

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sickles retaining its original wooden handle, 9 in. long. The scythe-blade, which is 12 in. long, has the peculiar tang, terminating in a spike bent at right angles, which survives on the small modern Norwegian scythes. The significance of the scythe lies in its testimony to a more advanced system of cattle-raising, and it was specifically designed for cutting hay close to the ground, whereas the sickle was used for cutting off the ears of corn at waist-level.²⁷

ANCIENT CULTIVATIONS

Remains of ancient derelict cultivations are abundant in Denmark, and are of more than one kind. Professor Hatt's work in this connexion has already been reviewed in some detail in *ANTIQUITY*,²⁸ so that it will not be necessary to say very much about them now.

The most important type is that which corresponds in form and general arrangement to our Celtic field-system. In this we find large numbers of small, squarish plots, separated by field-banks of turf or stones, or by low lynchets, and generally from $\frac{1}{4}$ to $\frac{3}{4}$ acre in area. This field-system seems to be peculiar to the pre-Roman Iron Age. One of the best examples of this type is to be found on the eastern slope of a small valley on Byrsted Hede²⁹ (PLATE III), while opposite to it, on the western slope, is a separate series, consisting partly of similar squarish plots, but mainly of long, narrow strips of variable length, running up and down the hill-side, and separated by similar field-banks. The lengths of these strips varies from about 170 ft. up to 1100 ft., and the breadth is usually about 50 to 60 ft. In some cases there is evidence of a plot being subdivided, presumably between heirs, and this observation, together with the lack of uniformity in the size of the plots, makes it fairly certain that we are not dealing with a form of open-field system. It has not been possible to date this western series of fields on Byrsted Hede, but Professor Hatt is tempted to associate these primitive strip-cultivations with the early use of the heavy, mould-board plough like that from Tømmerby, and to assign them provisionally to a phase of development anterior to the rise of the open-field system, which as we know it in medieval England, was based on the use of the eight-ox plough and the standard acre-strip of 660 ft. by 66 ft.

²⁷ Discussed in a review in *ANTIQUITY*, 1934, VIII, 237-9.

²⁸ *ANTIQUITY*, 1932, VI, 393-8.

²⁹ 'Hede', that enters into so many of these place-names, corresponds to our 'Heath'.

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necessarily had to be built in this compressed form. So it is once more a special case, and as such had no influence in after-times on the development of the normal basilica type.

Accordingly, of the churches which I have described, only the Eleona church shows a normal scheme; the churches of the Sepulchre and of the Nativity were revered as the most holy pilgrim churches of Christendom, but were not imitated. Churches were certainly built in many places ostensibly to recall biblical sites; for

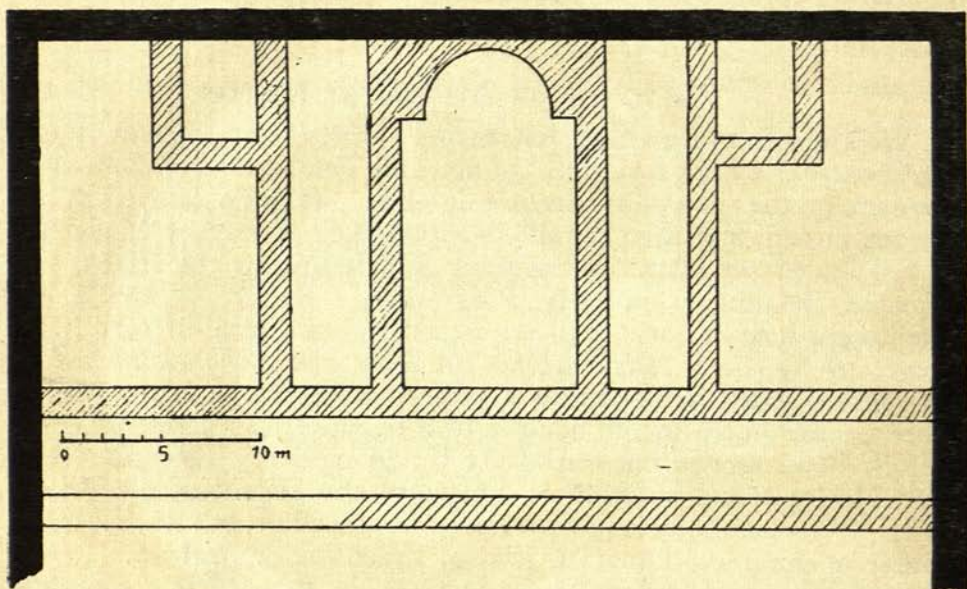


FIG. 5. THE SHRINE OF MAMBRE AT HEBRON

instance, Santa Maria Maggiore at Rome, which is even called 'Ad praesepe', or the churches of Bethlehem, of the Cross, and of Sion, as we find them especially in Armenia and in Georgia. But the actual churches in question were not closely copied, and at the most the rotunda-form of the Anastasis was used; yet this too was adapted to suit local needs, as may be seen from the Martyrion of SS. Carpus and Papyus, at Constantinople,⁷ which I discovered, and which in literary sources is expressly stated to be a copy of the Jerusalem rotunda (FIG. 6). The Church of the Nativity, reconstructed at the beginning of the

⁷ Byzanz. *Istanbuler Forschungen* 8 (Berlin, 1936), 1 ff.

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sixth century (FIG. 4) has exercised an influence outside Palestine ; but only with any significance in the provinces. Two churches have lately been excavated in Epirus,⁸ which clearly show the influence of Bethlehem

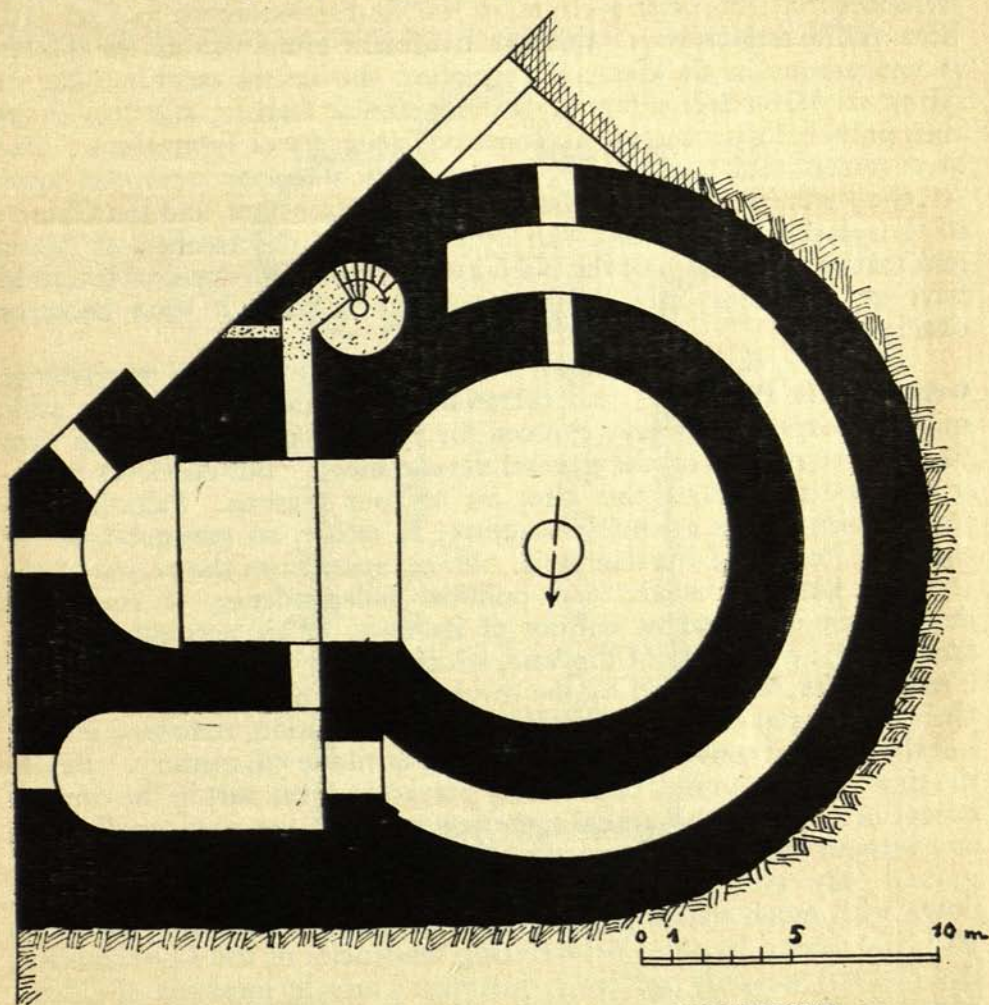


FIG. 6. MARTYRION OF SS. CARPUS AND PAPYLUS, CONSTANTINOPLE

in their striking triple-conched apse : I allude to the modest basilicas at Dodona (FIG. 7) and Paramythia, which may be ascribed to about the middle of the sixth century. However, even this type had no influence on

⁸ *Arch. Ephemeris* 1929, 204 f.

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the great architecture of the West and East. The reconstruction shows no specially happy architectural treatment ; particularly awkward is the superstructure of the central space at the intersection of the nave and transepts ; a triumphal arch, as in the Roman churches, would have been more satisfactory. But the treatment employed at Bethlehem is not unique of its kind ; for instance, the rather older basilica of Mena at Alexandria shows an exactly similar feature, and this in its turn probably goes back to an ancestor in the city of Byzantium. The arrangement had no long life, however, but was soon improved upon (cf. the Justinian Church of the Apostles at Byzantium, and the Church of Theologos at Ephesus). In other words : the basilica of Mena and that of the Church of the Nativity are a transition-type, which could have an influence only in the provinces because it soon becomes obsolete.

However, since Constantine's day, many churches and monasteries were built in Palestine ; and therefore an individual Palestinian style might be expected to have evolved for the later period, which in turn would have reacted on the general development. But on closer examination we must deny this also, for obvious reasons. Palestine was from ancient times a corridor-country, or rather, an advance-base for the great Powers of Further Asia. Since, apart from the period of the Israelite kings, it never had political independence, it could not develop an independent culture of its own. This accounts for the fact that the prosperity of the land, which neither formed a religious nor a racial unity, was ruined by the revolts under Vespasian and Hadrian. Only the coastal strip, with its Hellenized population, remained intact ; but this was not converted to Christianity until the 5th century. Before the time of Constantine, Christianity played no great part in the country except in Caesarea the capital ; the few communities were small, poor, and without influence. Even after Constantine, the new religion gained ground only with difficulty. In 552 the Emperor Gallus had to put down with much slaughter a revolt of the Jews in Galilee, which was probably caused by the Christianizing tendencies of the Government ; and Samaria was only pacified in Justinian's time by measures of Draconian severity ; while even at the end of the century, Christian pilgrims, such as the anonymous writer of Piacenza, complain bitterly of the knavery which they experienced in their journey through Samaria. When the Persians invaded the country in 614, Jews and Samaritans immediately uprose, and rivalled the Persians in burning down churches and monasteries. Christianity really only gained a firm footing among

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the convert heathen of the Greek cities and of the half-settled Arabian peoples of southern Judaea. The many pilgrim churches and most of the monasteries were also founded by foreigners ; to give only a few examples :—the church of Garizim built by the Emperor Zeno, the church of St. Stephen built by Eudocia, the Nea of Justinian, the

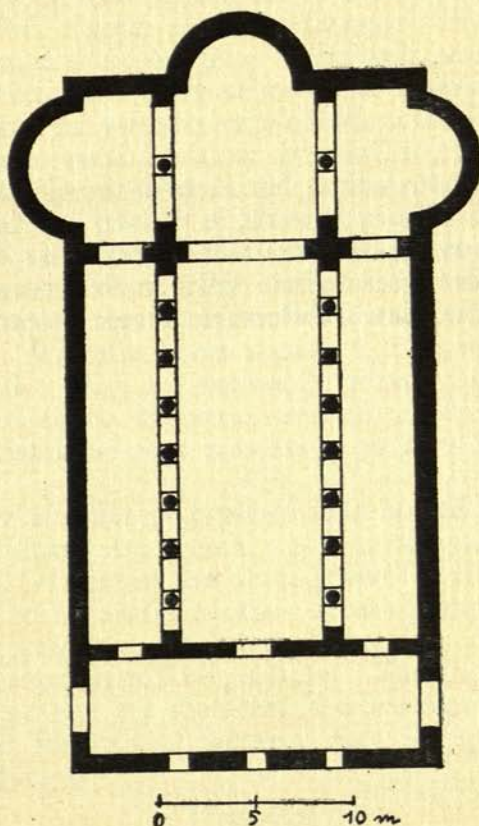


FIG. 7. BASILICA AT DODONA

church of the Sepulchre of Mary built by Mauricius, the Bishop's church at Gaza—for the erection of which the Egyptian court provided not only money and marble, but also the plans for building—or the Imbomon church on the Mount of Olives, erected by the Roman lady Poimenia. Very instructive in this connexion are the 200 dipinto inscriptions, which I collected from a burial vault in the monastery of

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Choziba at Jericho, and published in 1931 in the *Römische Quartalschrift*. The names of the monks are Greek or Roman ; Semitic-Arabian are entirely lacking. In about 60 cases the family of the dead man is given. We find a few from Gaza, Ascalon, and Caesarea, while the rest come from practically all the provinces in the Empire. Therefore the main Christian stratum consisted of foreigners, who set a cultural tone, and naturally introduced everywhere their artistic influence. It is not surprising, therefore, that many buildings show a pronounced mixture of styles, which is especially clear in the Church of the Multiplying of the Loaves and Fishes at Et-Tabgha, which I have described.⁹ Therefore, the importance of Palestine for the history of art lies not in what it gave to the Christian world, but in what the Christian world gave to it. But it is so far important to us, in that we can discover in Palestine—just because so many churches were continually being built there—many otherwise lost intermediate links in the great chain of development of ancient Christian architecture outside Palestine.

⁹ *Church of the Multiplying of the Loaves and Fishes*: trans. by A. A. Gordon (London, Coldwell, 1937), 35 ff.

Ancient Fields in Manaton Parish, Dartmoor

by ALFRED H. SHORTER

IN the district around the valley of the West Webburn stream which cuts north-south through eastern Dartmoor, Grimspound seems to attract most attention. I have found no reference to the old field boundaries and terraces which lie in this district, mostly within the western part of the parish of Manaton. This article deals with fields within, or adjacent to, the Manaton parish boundary, but there are also sets of terraces which I have observed, but not yet explored, mainly to the east of the Widecombe-Grimspound road, opposite Blackaton Manor. These terraces appear to be very similar to those described here, and as they are outside Manaton parish the connexion between the terminations of some sets of terraces and the parish boundary which, from the plan, appears to be significant, must not be emphasized.

The discovery of different types of field boundaries in the district by Col. Ransom Pickard and myself, was late last summer, when it was difficult to survey, because of the dense growth of bracken on this part of the moor, and to excavate, because of weather conditions and the delay in obtaining sanction. It is hoped that this summer excavation and detailed measurement will be possible. The approximate positions of the various discoveries are shown on the accompanying sketch-plan, and the principal features of interest may be grouped under the following headings :—

TERRACES

Some of the lynched fields on Dartmoor (e.g. at Kestor and Trowlesworthy) have been described.¹ At Porthmeor² and Chysauster³ in west Cornwall, there are numbers of small, terraced fields, but there

¹ E. C. Curwen, 'Prehistoric Agriculture in Britain', *ANTIQUITY*, 1927, I, 283.

² F. C. Hirst, 'Notes upon three Excavation Sites in Zennor', *West Cornwall Field Club*, p. 2.

³ H. O'Neill Hencken, 'An Excavation by H.M. Office of Works at Chysauster, Cornwall, 1931'. *Archaeologia* 1933, LXXXIII, 238.

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seems to be no other example of terracing such as that found in the Challacombe area, in either Devon or Cornwall. Most of the terraces to be described are on both sides of the valley in which Challacombe farm stands, and in the valley further west on the slope facing Soussons. The two streams come together to form the West Webburn river, and there are terraces on the 'nose' of the spur between the valleys, and on the north-facing slope of a saddle, looking up the Challacombe valley. There are also traces in a field nearby (A).⁴

These terraces in most cases roughly follow the contours. They are of different lengths and widths, and there seems to be no standard. Several are about 150 yards in length, but even in the apparently well-preserved, compact set (B), the terraces are not all of the same dimensions. The section taken across this set shows the variations in width.

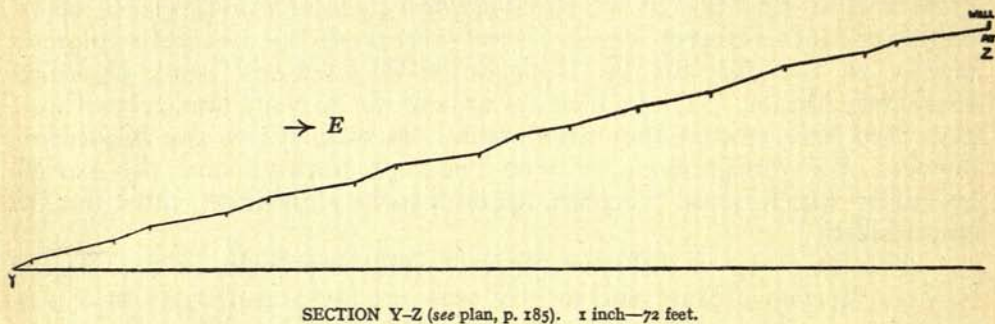
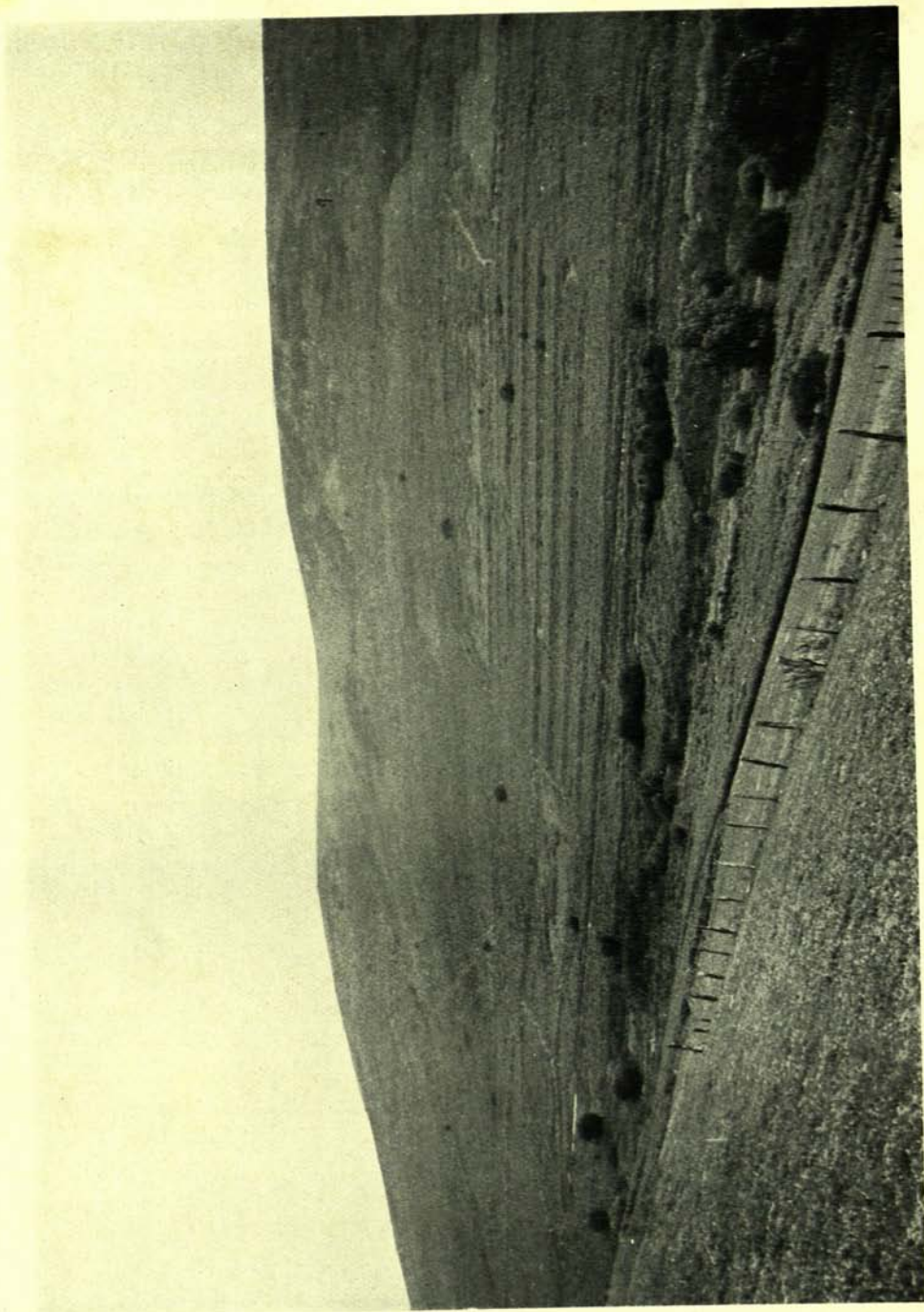


PLATE I shows the set as seen from the other side of the valley. PLATE IV, 2 gives an example of the banks or heaps of stones behind which, so it appears, the soil was placed to make the level parts. These banks of stones contain huge blocks of granite as well as small rocks, and are clearly shown in many of the terraces. At C are very small terraces, only a few inches in depth, and with intervals of 32 or 50 feet between pairs. These are situated on a relatively moderate slope, and on the ground near them there are numerous heaps of stone. Most of these seem to be scattered indiscriminately, but a few are in line and roughly parallel to the small terraces. The heaps are about three feet across and 18 inches high, except one large mound of stones (D), and all seem to consist of material which was ready to be used in making further terraces. It may be impossible to find when the process of cleaning and preparing this 'newtake' at such a great height on the

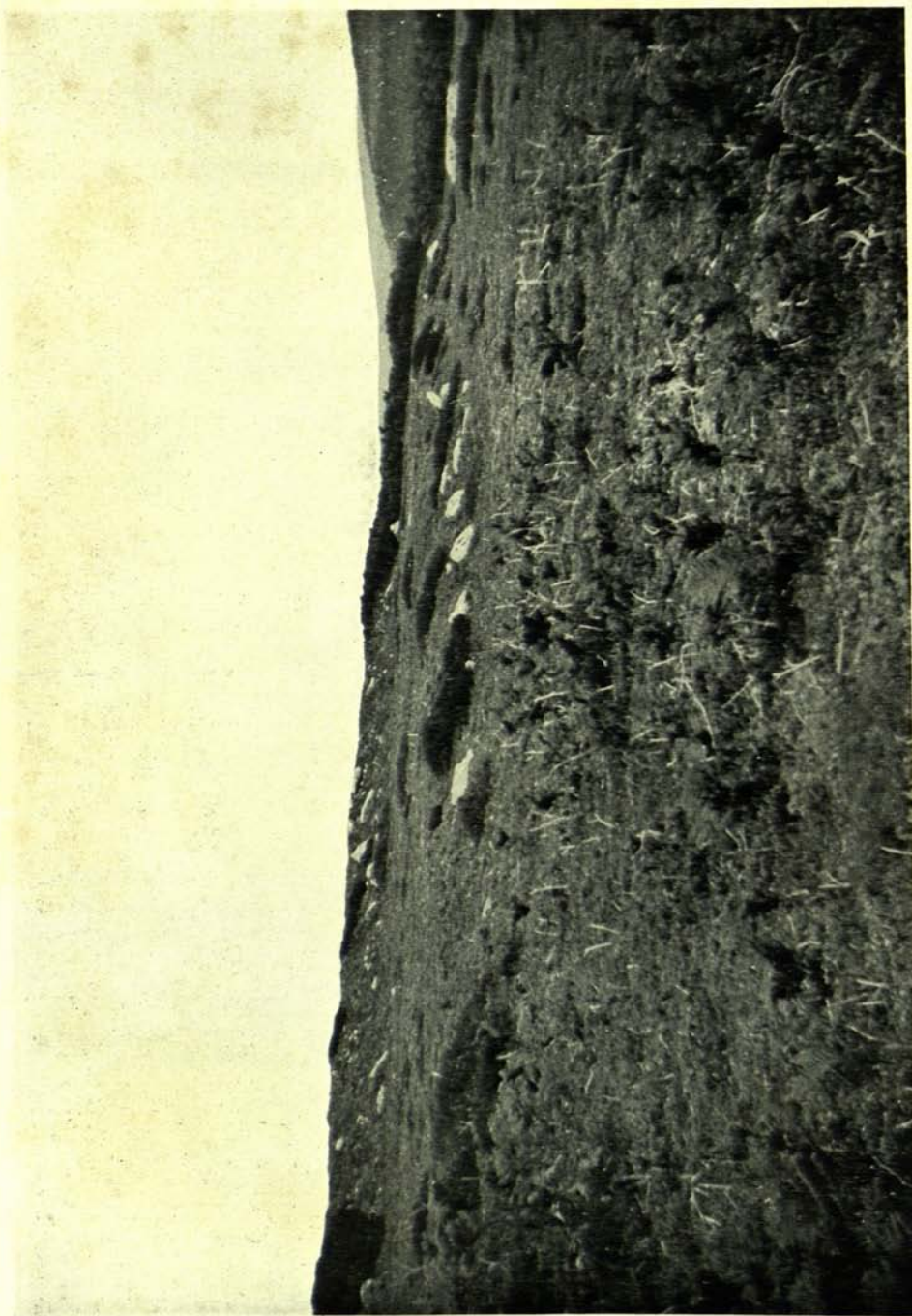
⁴ The capital letters refer to the sketch-plan.

PLATE I



ANCIENT FIELDS, MANATON, DEVON : TERRACES AT B (*see* p. 184)

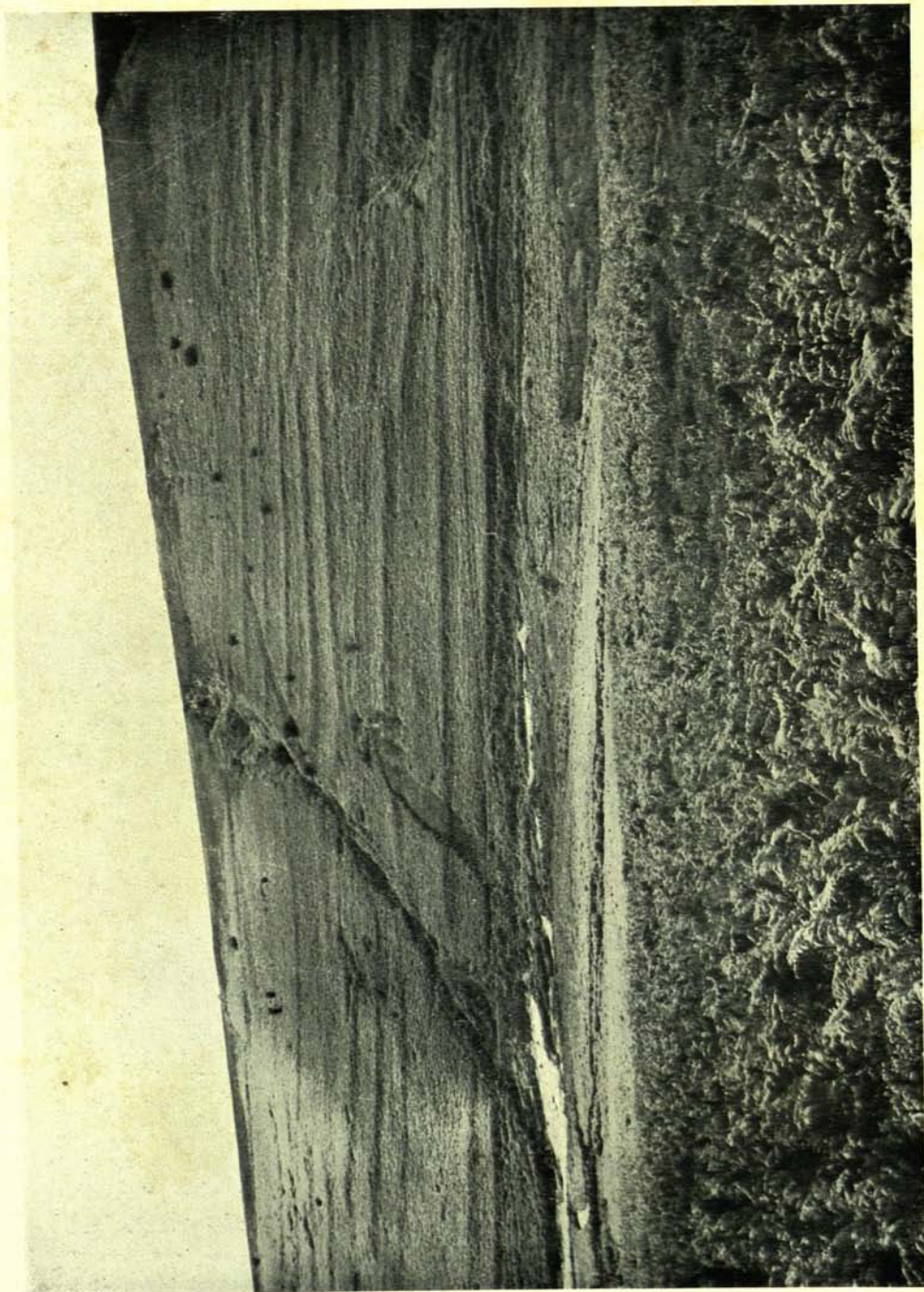
PLATE II



ANCIENT FIELDS, MANATON, DEVON : TERRACES FACING SOUSSENS :

Note the banks of stones and boulders (*see* p. 186)

PLATE III



ANCIENT FIELDS, MANATON, DEVON: TERRACES IN FIELDS R AND S

PLATE IV



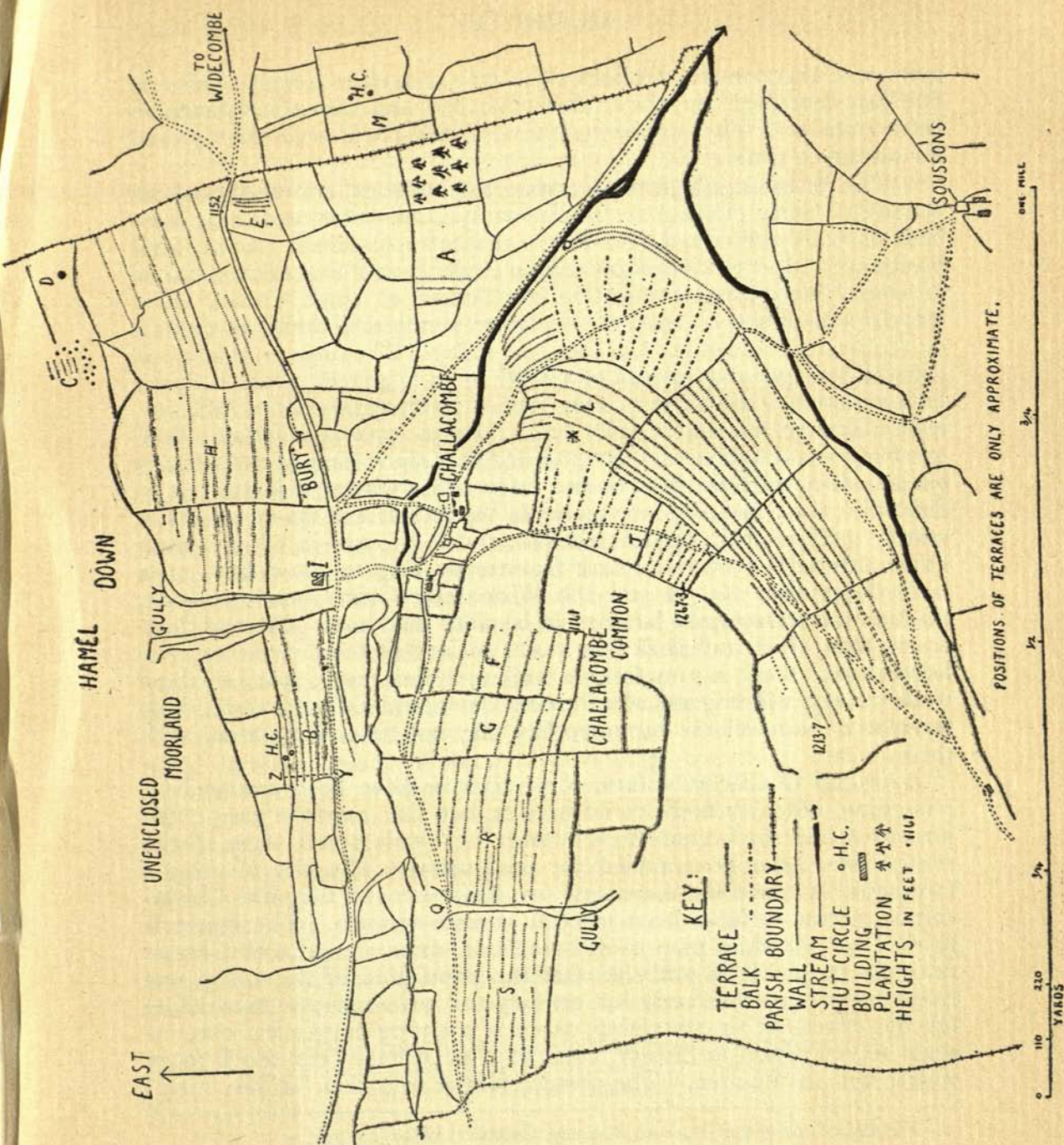
1. TERRACES IN FIELDS R AND S



2. BANK OF GRANITE BLOCKS AND STONE AT B, MADE TO
SUPPORT THE SOIL IN THE TERRACE



3. WALL OF HUT CIRCLE ON TERRACES AT B
ANCIENT FIELDS, MANATON, DEVON



ANCIENT FIELDS, MANATON PARISH, DARTMOOR

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moor was abandoned. In field E the type of terrace is very similar to that just described, and the banks are shallow and have short distances between them. They are being effaced, for this field is constantly used for pasturing cattle.

The terraces which face across to Soussons are illustrated in PLATE II. Some of these are riddled with rabbit-holes, and some have been partially obliterated, so that it is almost impossible to give accurate positions. Most of them show certain evidence of the erection of banks of stones, and there are not a few dumps of small stones. The lengths and distances apart of the terraces vary somewhat, as they do on the western side of the Challacombe valley. The slope on this side is generally steeper and, instead of a width of 30 to 40 feet, which is found between some of the consecutive terraces at B, the general slope measurements between terraces in fields F and G are 90, 120, or sometimes even 150 feet (round figures). PLATES III and IV, I show some of the terraces on this side and how, near Q, and a few other places, it is difficult to determine the exact positions owing to the activities of tin-streamers in cutting gullies and in dumping debris, and to the way in which a path has interfered. However, these features do help to show that, since both the gullies near Q and the Widecombe-Grimspound road cut through the terraces, the latter must be older than both. Most of them are in sets which interlock (see PLATE III) and at these dividing lines between sets there is sometimes a wall, sometimes not; some of these walls are very winding and often broken down, and although they follow the plan of some of the terraces, they may not be contemporary with them.

Around Challacombe farm some terraces have been removed by ploughing, not only in fields such as H, but also near the road; the present farmer has removed a number of 'walls', and some of the stone-banks have been raided for road-metal. The site of an old farmhouse is where there are now two barns (I), and this, like Challacombe, seems to have been close to terrace-systems. The house is marked on the tithe map of c. 1840,⁵ and there was a public house near the farm. It is probable that the population of the valley was much more numerous early last century and, although one must allow for the effects of tin-streaming, there is a strong suggestion that, at some recent period in history, cultivation must have been much more widespread in the area. The present farmer says that 'at one time'

⁵ In the offices of the Diocesan Registry, Cathedral Close, Exeter.

ANCIENT FIELDS IN MANATON PARISH, DARTMOOR

300 acres of the lands around Challacombe were under corn. After the Napoleonic wars the price of wheat was very high, and until the repeal of the Corn Laws became effective it is probable that many parts of the moor were brought under cultivation. There are many traces of ridge-and-furrow in fields near the Moretonhampstead-Princetown road almost opposite the spot where the road from Widecombe via Challacombe comes in. Here, as on Soussons Down, the ridge-and-furrow marks are mainly up and down the hillside. Although in fields where there are terraces there is no trace of ridge-and-furrow, it seems possible that these were cultivated in the early nineteenth century.

BALKS

These are banks of stones and earth, 3 to 6 feet wide and only a foot or so in maximum height, and they go up and down the spur. Like the terraces, they are by no means straight, and in J are spaced at irregular intervals varying from 30 to 100 feet, while in K they splay out down to the bottom of the slope, where accumulation of soil has undoubtedly increased the size of the very large terrace and two smaller terraces there. In field L there is a dump of stones at x; there are fairly distinct terraces, but no trace of the up-and-down banks, and the fact that these latter are present in J and K suggests that they may possibly have been continuous; in L they may have been obliterated, and replaced, by a separate system of terracing. If this is so, one bears in mind the process deduced by W. P. Hedley⁶ in Redesdale and at Housesteads, Northumberland. There, 'the lynchets are formed of rough boulders taken off the cultivated strips and in no case is there any trace of true walling'. This description applies to the balks in fields J and K, but a full comparison is not urged. Hedley suggests a Celtic origin for these up-and-down 'lynchets', which run north and south on the site he describes, and supports his suggestion with place-name evidence. Now, in Devon, Saxon penetration into the county was slow, but complete in its influence on names,⁷ and probably on settlement too. On the borders of Dartmoor, it may be that British conditions persisted until the coming of the Saxons, which perhaps in a district like Challacombe occurred quite late. The earliest records of

⁶ 'Ancient Cultivations at Housesteads, Northumberland', *ANTIQUITY*, 1931, v, 353. Hedley's conclusions have been challenged, and different periods have been suggested by W. A. Eden, 'The Housesteads Terraces', *Annals of Archaeology and Anthropology*, Dec. 1937, xxiv, 156.

⁷ *The Place-Names of Devon*. English Place-Name Society, 1931, viii, introduction.

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two places situated close to systems of lynchets are 1238 for Blackaton Manor⁸ and 1481 for Challacombe.⁹ However, as yet it is not clear that one can postulate the same process as Hedley found, and the periods concerned are most probably different.

FIELD-WALLS

These are of many types and in all stages of decay. Nevertheless, it is important to distinguish two principal types:—

(a) Ordinary 'dry' walls, typical of Dartmoor, in good repair. Usually these enclose fields which are, or have been quite recently, under cultivation, but some are part of the wall system which encloses the terraced fields on the side of the valley opposite Challacombe farm.

(b) Broken down walls, some of which have been described as separating sets of terraces, as in fields F and G.

A CIRCULAR FIELD

This is now cut in two by the Widecombe-Challacombe road, but on an old estate map at Challacombe farm the two portions are treated as one field, of which the acreage is 1.867. Its traditional names, according to the oldest inhabitant at Challacombe, is 'Bury' or 'Berry' and it may have been a pound (compare 'Berry Pound'¹⁰) near the site of the old farmhouse. On the eastern side, however, there is an alignment of standing stones inside the wall, and the space between the stones and the wall is a kind of platform. Most of the wall seems to be quite old.

DWELLINGS

(a) Two contiguous hut-circles are on the two top terraces, (one on each) at B. These circles are not recorded on the O.S. maps. They measure 11 yards in diameter, have very strong walling (see PLATE IV, 3), and an entry marked by an upright is very well marked in the upper one. It is most important that excavation should be attempted in order to ascertain whether these hut-circles are contemporary with the terraces on which they are situated, or whether the makers of the terraces

⁸ *ibid.* p. 529.

⁹ *ibid.* p. 481.

¹⁰ To the east of Hamel Down. On Dartmoor and its borders, and in other parts of Devon, there are examples of circular pounds and many fields, of various shapes and sizes, called 'Bury' or 'Berry'.

ANCIENT FIELDS IN MANATON PARISH, DARTMOOR

found it easier to incorporate them on account of the difficulty of destroying such strongly built dwellings. Little can be said as yet save that most of the hut-circles excavated on Dartmoor are pre-Roman, but that must not be used to support an argument that the terraces are too.

(b) Two hut-circles, recorded on o.s. maps, just outside the parish boundary, at M.

(c) A number of hut-circles, recorded on o.s. maps, outside the parish boundary, at N.

(d) A 'protected passage-way', which some think is a tin-working, leading on to a roughly circular platform, site O. The platform is not 'protected' on the west side, where it leads on to the three terraces, and may have been a dwelling of some kind, though no parallel example has been brought to the writer's notice.

A further season will, it is hoped, help to establish the ages of the fields and dwellings which have been described, as well as of the other series of terraces near Blackaton, to elucidate the relationship between all these important features, and to compare them with finds in other areas.¹¹

My best thanks are expressed to Col. Ransom Pickard, and to Mr A. G. Clook for all the help which they have so kindly given me, especially in the photography and measurement.

¹¹ e.g. The lynchets discussed by E. C. Curwen in 'Ancient Cultivations', *ANTIQUITY*, 1932, VI, 389.

A Fossil Skull of an Ancestral Bushman from the Anglo-Egyptian Sudan

by SIR ARTHUR SMITH WOODWARD, F.R.S.

IT is now recognized that during the Pleistocene, or even during a later prehistoric period, there were in northern Africa human races related to the existing Bushmen and the Hottentots of the south. The shape of the skull in some of the early Egyptians, indeed, suggests relationship to the Bushmen. The discovery in the Anglo-Egyptian Sudan of a new type of fossil human skull with several resemblances to that of a Bushman, is therefore of great interest. The specimen was found in February 1924 by Mr W. R. G. Bond, who was then Governor of the Fung Province of the Anglo-Egyptian Sudan. It was embedded in a limestone concretion, which lay a few feet above low-stage river level on the foreshore of the Blue Nile at Singa about 200 miles south of Khartoum. I have to thank Mr G. W. Grabham, then Government Geologist, for the opportunity of studying the fossil.

The skull (PLATES I-III) is still partly embedded in the hard matrix, but it has been cleaned enough to exhibit its principal characters. It lacks only the face below the orbits and the zygomatic arch of the right side, but its base is obscured by rock which probably cannot be removed. The walls of the brain cavity are also encrusted with a very hard deposit. The bone is completely mineralized and very well preserved, without much distortion by crushing. The maximum length of the skull is about 188 mm., and the maximum width 154 mm., so that the cephalic index is nearly 82. It is therefore just brachycephalic.

In upper view (PLATE I) the skull is pentagonoid in shape, widest at the comparatively large parietal bosses and very narrow at the anterior end of the frontal region. The zygomatic arches project considerably at the sides, and the lower ends of the nasal bones are visible in front. The coronal, sagittal, and lambdoid sutures are much serrated or zig-zagged; and as the coronal suture is less conspicuous in the fossil than the sagittal, it is probably more nearly closed. The

A FOSSIL SKULL OF AN ANCESTRAL BUSHMAN

frontal bones are completely fused together, and there is no trace of the metopic suture. They are much constricted to a width of 110 mm. in their narrowest part just behind the large external angular processes, where the maximum width is 128 mm. There is a gently rounded depression above the prominent supraorbital border which is a conspicuous feature of each orbit; and the forehead is tumid, not retreating, above this anterior depression. There is a slight longitudinal median keel in the upper and hinder half of the frontal region ending at the bregma, and the frontal arc measures 128 mm. The parietal bones are remarkably large and broad, and rise at the sides into a pair of bosses at the beginning of the hinder third of the skull. In their anterior half, immediately behind the bregma, these bones are flattened; but in their hinder half between the bosses, there is a well-marked longitudinal depression which ends at the lambda. Here the skull is fractured, and is seen to be 13 mm. thick at a distance of 50 mm. from the summit of the parietal boss. The parietal arc measures 103 mm.

In side view (PLATE II) the fulness of the frontal region is well seen, but the thickness of the supraorbital ridge appears a little exaggerated by a thin incrustation of mineral matter. Behind the bregma the flattening of the roof as far as the parietal bosses is evident; and then there is a convex slope backwards which continues on the upper part of the occipital bone. This bone at the lambda is 7 mm. thick. When the skull is adjusted to a horizontal plane passing through the nasion and the middle of the auditory meatus (PLATE IV, 1), the auricular height is 115 mm. The ascending wing of the sphenoid is comparatively wide, and at its upper end it articulates with the parietal for an extent of about 20 mm. The squamous plate of the temporal bone, though a little broken at its upper border, is clearly very low, and the supra-mastoid ridge extending backwards from the zygomatic arch is prominent. This arch is incomplete and broken away in its lower portion forwards. The mastoid process as shown on the right side of the skull, seems to be unusually small. The limits both of the temporal muscle and of the temporal fascia are conspicuous on the parietal bone, and the line of the fascia is between 80 mm. and 90 mm. from the middle line of the skull in its nearest portion.

In back view, of which the lower half is still obscured by matrix, the flattening of the roof in the parietal region is well seen; and the sides of the skull below the prominent bosses are shown to incline inwards to the base. These features are also observable in a cross-section of the skull at the parietal bosses (PLATE IV, 2). The longitudinal

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A section through a lynchet at Byrsted Hede showed that the heath conditions which obtain now in that area did not exist when those fields were brought under cultivation, and Knud Jessen has been able to show that in general the farmers of the pre-Roman Iron Age chose areas that were then on the zone of overlap between heath and forest.

Among the fields of pre-Roman Iron Age date on Fogstrup Hede evidence of local iron-working was found in the form of smelting-hearths. Such a hearth would be found in the corner of a field under the shelter of a lynchet, accompanied by bog-iron ore, cinder, hammerstones and quartzite anvils, and this industry was proved to be contemporary with the cultivation. Strikingly enough, a small valley which runs through the area in question is called Smeddal, that is 'smith-dale'.

At Grøntoft Hede evidence was found suggesting that the fields there had originally been marked out with a small ditch or furrow.

There appears to be no evidence as to when the high-ridged strip-cultivations first appeared; they are a product of the mould-board plough, but the latter had certainly been in use in Denmark long before the ridged acres appeared. They are also a product of the medieval common-field system, but it is not known when and how this first arose. The plots of the pre-Roman Iron Age must be regarded as having belonged to individual owners, and not as part of a common-field system.

HOUSES AND VILLAGES

Neolithic houses have been found at Troldebjerg by J. Winther, and are of two forms: horseshoe-shaped, and rectangular. The latter lie in a row, north to south, each having a single row of roof-bearing posts placed between the middle line of the house and the west wall. The latter, which is of wattle and daub, is the only vertical wall, the roof sloping obliquely down to the ground on the east side.

Houses and villages of the Roman Iron Age are much commoner. A fine example at the farm of Mariesminde has been fully described by Professor Hatt in *ANTIQUITY*,³⁰ so that little need be said here on this subject except to draw attention to the long type of house, consisting of the living-room with its central hearth at one end, and the byre at the other end. This type of dwelling, translated into dry stone masonry, survives to the present day in use in the Hebrides³¹ where it may well

³⁰ *ANTIQUITY*, 1937, XI, 162-73.

³¹ See forthcoming article in *ANTIQUITY*.

EARLY AGRICULTURE IN DENMARK

have been introduced by the Vikings. Typical long houses were supported on two rows of posts placed about 2 to 3 ft. on the inner side of the earthen walls. The latter were about 5 ft. thick, and the internal dimensions of the house might be as much as 47 by 17 ft.

Of household implements the most important is the quern or hand-mill. The saddle-quern—or 'push-quern', as the Danes call it (*Skubbekværn*), for it by no means always resembles a saddle—is very common on all the earlier Iron Age occupation-sites, and goes back to the Neolithic period. It was used for grinding corn, not only in and between the houses, but also on the edges of the fields themselves. The rotary quern, which superseded the saddle-quern, does not appear in Denmark till the 3rd century A.D.—some 400 years after it reached southern Britain. Nothing is said of its typology, but the only specimen illustrated is of the thick, narrow variety, with almost flat grinding-surfaces, similar to our north British type, except that no handle-hole is present.³² This lack is by no means uncommon, and it is surely not necessary to suppose, with Professor Hatt, that the upper stone was swung round, first one way and then the other, by means of both hands without a handle. This seems highly improbable; more likely is it that it was turned by means of a radially placed wooden handle that was jammed into the central aperture. This was definitely the method adopted in the later Roman querns of southeast Britain.

In the Roman Iron Age corn was stored in great jars within the house. The one illustrated (PLATE IV), from Ginderup, stands 4 ft. high, and has an opening near the bottom from which the housewife could take small quantities of corn as required. In this case the jar contained oats.

The labour of grinding corn was diminished if the grain had previously been roasted or 'parched'. The coarse-ground barley found in a jar in a burnt house-site at Grønvang on the island of Mors was passed through sieves of different meshes, in order to study its character. Of the contents of the jar, 37 per cent. passed through a mesh of 1 mm., then 45 per cent. through a mesh of 1.5 mm., after which 13 per cent., consisting of broken pieces and whole grains, passed through a mesh of 2 mm., leaving 5 per cent. (mainly whole grains) in the sieve. The larger broken pieces appeared as sharp, angular fragments, indicating that they had undergone roasting before being ground. Experiments at grinding barley in an old quern showed that when not previously

³² ANTIQUITY, 1937, XI, 147.

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roasted the grains tended to be rolled out into flattened forms, but when dried in an oven the tuber was less flattening no angular fragments. If, however, the barley was first roasted it easily broke into angular fragments on grinding, similar to those found in the jar at Grønvang. The corn should be dried first, and then roasted slowly, otherwise it blisters. This roasting gives the meal a slightly sweet taste, as part of the starch is thereby converted into dextrin.

The barley meal is as likely to have been used for porridge as for bread, and we know that it was actually used for making beer. A black mass in the bottom of a bronze vessel from a woman's grave of the Roman Iron Age at Juellinge on Lolland turned out to be the remains of a kind of beer brewed from barley and flavoured with cranberry or cowberry, and bog-myrtle. A similar result was obtained in the case of a Bronze Age woman who was buried at Egtved with a birch-bark bucket containing the remains of mead brewed from wheat and honey. Tacitus mentions the use of barley and wheat for this purpose among the Germans.

The Iron Age settlement of the land comprised both compact villages and scattered farms. At Østerbølle is to be seen an excellent example of a long-village, consisting of two parallel rows of dwellings, the plan of which might be that of a present-day village in the Hebrides. As in Britain, so in Denmark, the habitation-sites of the Bronze Age are almost unknown, so that it looks as if the people of that time tried by the magnificence of their graves to make up for the lack of houses for the living. When they are found, the occupation-layers of the Neolithic and Bronze Ages are very thin as compared with those of the Iron Age, which suggests that the Neolithic and Bronze Age folk were probably semi-nomadic, living long enough on one site to reap a crop, or two crops, and passing on to fresh pastures and to break up fresh ground. For similar reasons, and for other reasons too, the same conclusion probably applies to Britain as well.³³ In the Iron Age, on the other hand, villages and farms were more or less permanent settlements, and the fields were tilled long enough to leave visible traces today. This change may have been due partly to the use of new types of implement, such, perhaps, as the *ard* and the plough, and partly to the working of iron which gave the peasants access to a metal that was not only native, but which was much more easily worked than bronze. Permanent settlement implies the use of manure for the fields, and this became

³³ *Proc. Prehist. Soc.*, 1938.

PLATE I

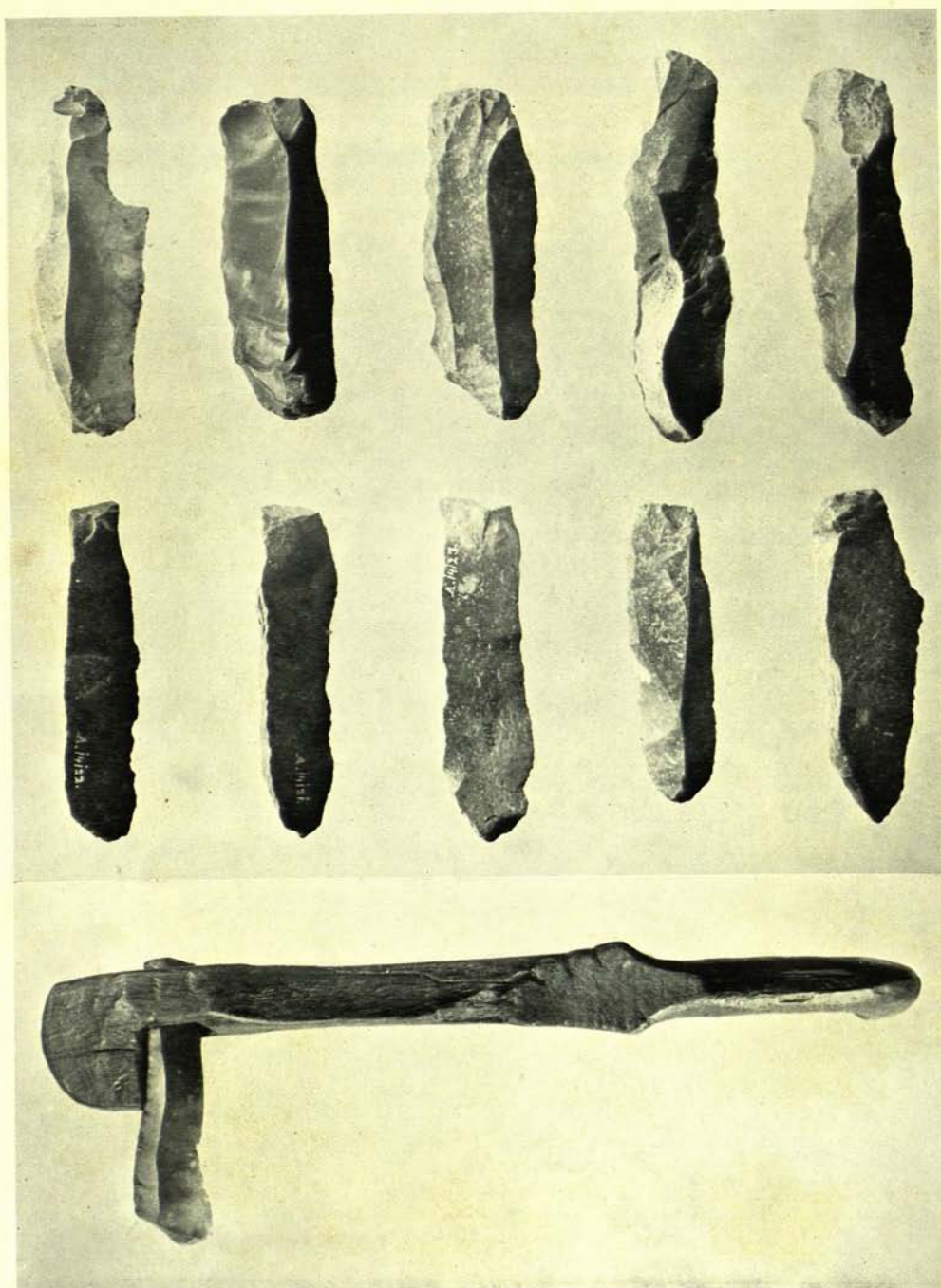


WOODEN ARD FROM DØSTRUP, JUTLAND (about $\frac{1}{3}$ ft.)
Length of beam, 10 ft. Dated by pollen-analysis to the beginning of the pre-Roman Iron Age (see p. 143)
(National Museum, Copenhagen)



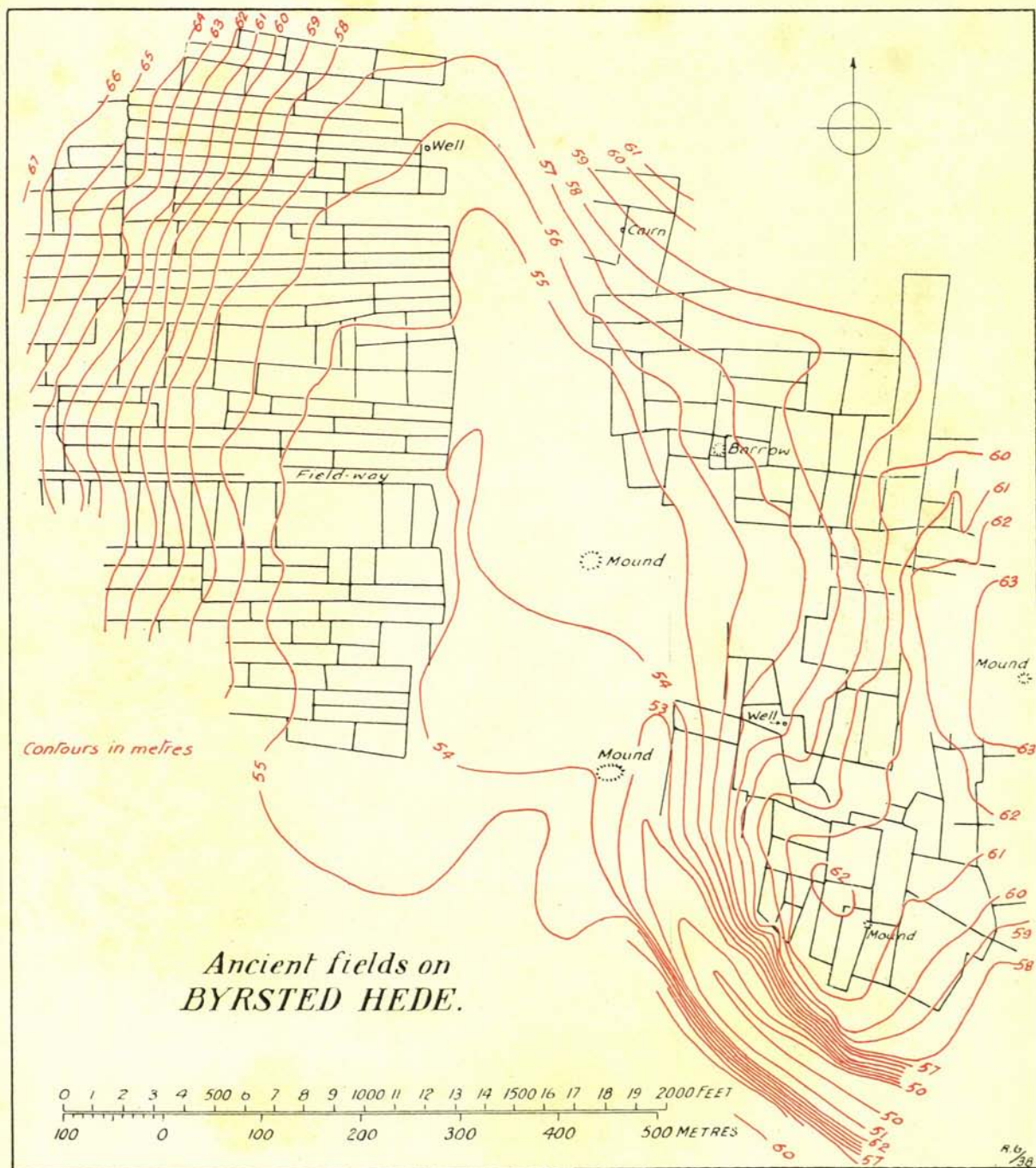
WOODEN PLOUGH-SHARE WITH TANG (about $\frac{1}{4}$ ft.) Length 2 ft. (see p. 146)
(National Museum, Copenhagen)

PLATE II



Left: FLINT SICKLE IN ORIGINAL WOODEN HANDLE; STENILD, JUTLAND ($\frac{3}{4}$)
Right: SET OF TEN WORN-OUT FLINT SICKLE-BLADES FOUND TOGETHER AT FRELTOTTE, FUNEN ($\frac{1}{4}$)
 All the flints show corn-gloss. (See p. 148)
 (National Museum, Copenhagen)

PLATE III



ANCIENT CULTIVATIONS ON BYRSTED HEDE (see p. 149)
(After Hatt)

PLATE IV



STORAGE JAR CONTAINING OATS, GINDERUP (J)

Roman Iron Age. Height 4 ft. (see p. 151)

(National Museum, Copenhagen)

EARLY AGRICULTURE IN DENMARK

available as a result of the stalling of cattle in byres ; winter-feeding was also ensured by cutting hay with scythes. It is possible that the deterioration of the climate in the Iron Age necessitated this form of care for the cattle, for without it the latter could not survive a snow-bound winter. It would seem that the semi-nomadic existence would only be possible in a climate with mild winters, such as may have been the case during the Neolithic and Bronze Age.

* * *

The last chapter of Professor Hatt's fascinating study deals with Religion and Society, and shows how the universal fertility cults, and also the structure of society, have been built up on the basis of the needs of the agricultural community. Of this, however, stimulating as it is, there is no space to deal here. It is only when we have similar studies of early agriculture in the other countries of Europe, equally free from racial or political bias, sane and well-considered, that we shall be able to complete the picture of that food-production which has been the mainspring of all the activities of primitive man since corn and cattle first appeared.

The Reindeer Hunting Tribes of Northern Europe

by J. G. D. CLARK

THERE is some truth in the assertion that the greatness of Britain, as displayed to the world at the Great Exhibition of 1851, should be ascribed as much to the favourable juxtaposition of iron and coal as to any qualities inherent in the British people : it can hardly be disputed that the pre-eminence in Prehistoric Archaeology once enjoyed by France was due in large measure to the archaeological richness of the caves and rock-shelters of the Dordogne and the Pyrenees. But, if we must deplore the backwardness of France in fields where other countries are as richly endowed by history, it is only fair to acknowledge that her archaeologists succeeded in systematizing the cultures of Upper Palaeolithic man in western Europe, at a time when the Neolithic was still chaotic in many countries and a 'hiatus' separated the two epochs. The exploration of the French caves began in the sixties of the last century and may be said to have already reached its culminating point by 1912, when Breuil put forward his famous classification at the Geneva Congress (Breuil, 1912). It is eloquent of the advanced stage reached by Upper Palaeolithic cave research in western Europe before the Great War that, after the lapse of a quarter of a century, Breuil has felt able (in 1937) to re-print his original lecture with only minor alterations.

Parallel with the work of cave exploration in France and neighbouring areas went the investigation of the settlements and tombs of neolithic man, in which the archaeologists of north and of central Europe played the leading role. If the systematization of the neolithic cultures has, despite certain regional exceptions, proceeded less rapidly than that of the Upper Palaeolithic, this is due both to the greater complexity inherent in the study of richer and more variegated cultures and to the existence of blank areas of which France and (until recent years) the British Isles were conspicuous examples.

As knowledge of the palaeolithic and neolithic cultures of Europe began to assume definite shape it became evident that a gap existed in

REINDEER HUNTING TRIBES OF NORTHERN EUROPE

knowledge for the period between the extinction of the older and the appearance of the newer civilization, and this blank period was seen to increase in length as chronology became more precise. While at one end the Upper Palaeolithic 'cave' cultures have come to be assigned, on the evidence of geological correlations, to a remote period of time, at the other the establishment of accurate synchronisms with the early civilizations of the eastern Mediterranean, Egypt and the Near East has led in recent years to a progressive contraction in the dating of the Neolithic cultures of central and of northwestern Europe. It was at first supposed that this blank constituted a veritable 'hiatus' in the human settlement of Europe, a period of desolation following on the disappearance of the Upper Palaeolithic reindeer hunters and only ended by the arrival of new ethnic groups equipped with a neolithic civilization. But the work of the last forty years has shown that, far from being depopulated during this lengthy period of time, Europe was inhabited by several distinct groups of hunting, fishing and food-gathering tribes, for whom the comprehensive term 'Mesolithic' was soon devised. Piette's excavations at Mas d'Azil (1895), de Mortillet's recognition of the Tardenoisian (1896) and Sarauw's excavations at Mullerup (1900) mark important first-steps towards the modern conception of the Mesolithic, a conception which goes far to establish continuity between the Palaeolithic tribes of the remote past—shadowy inhabitants of geological time—and the Neolithic and Bronze Age communities with which it is not difficult for Europeans of the twentieth century to feel some degree of kinship. Yet, prior to the remarkable work of Prof. G. Schwantes and his brilliant pupil, Alfred Rust, in the Hamburg-Kiel area to which it is the purpose of this article to draw attention, the gap remained incompletely bridged. Much, indeed, was known of the forest cultures of the Boreal and Atlantic periods, but the long pre-Boreal remained almost completely blank in the prehistory of northern Europe. Less than a score of axes and adzes formed of reindeer antler, termed 'Lyngby' axes after the finding-place of one of them at the northern tip of Jutland, and a few stray flints comprised the sum total of the archaeological material available for the vital period which saw the transition from tundra to forest conditions.

The story of how the recent great advance in knowledge has come about is worth recalling in some detail. The first step was taken when Schwantes recognized the significance of a flint industry found on surface sites at Ahrensburg, a small town to the northeast of Hamburg (Schwantes 1928 and 1931). The flint types (FIG. 1, nos. 1-8)

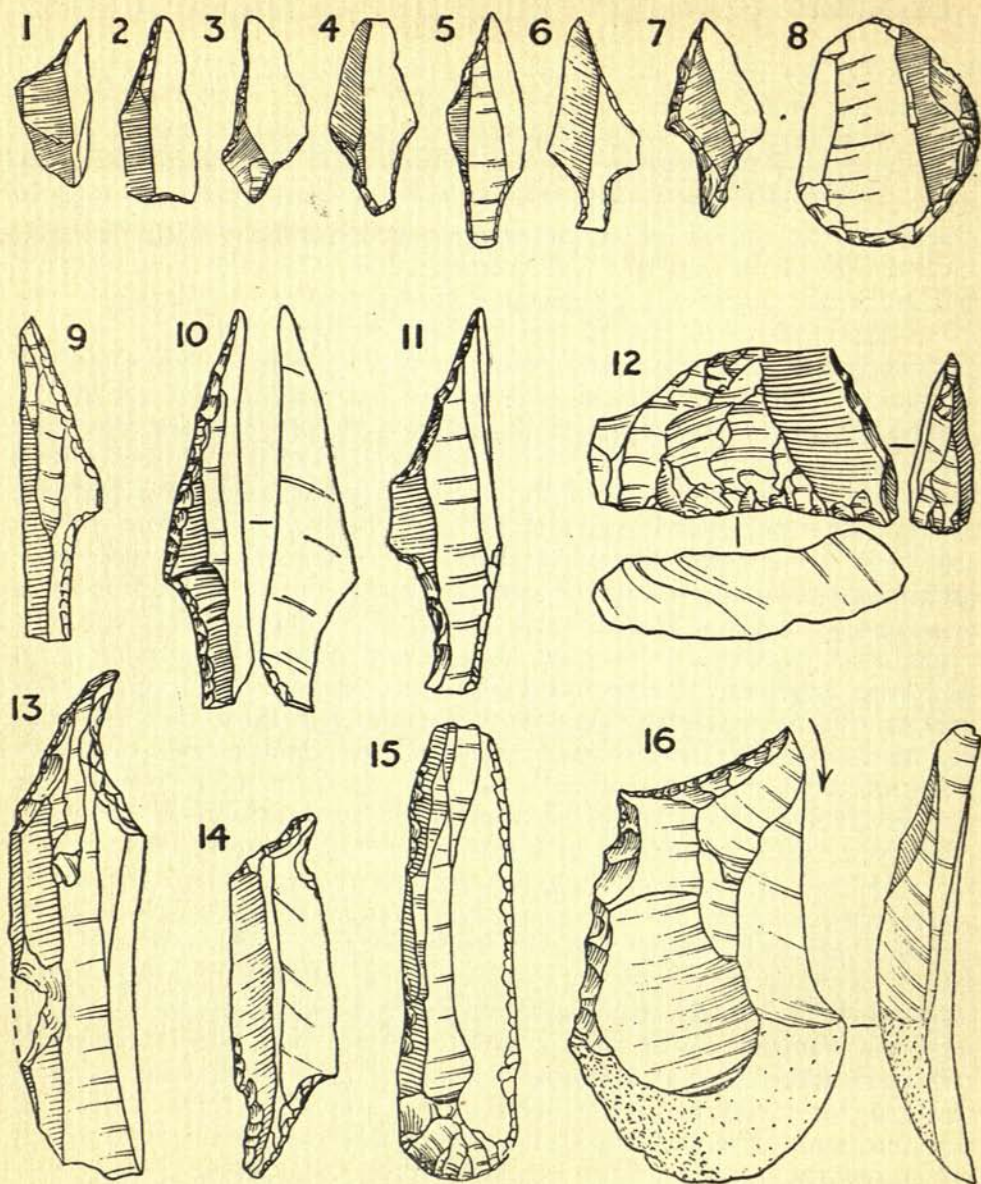


FIG. 1. LEADING FLINT TYPES
 nos. 1-8, Ahrensburg culture; nos. 9-16, Hamburg culture. Scale $\frac{1}{4}$

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included burins, keeled, horseshoe and end-of-blade scrapers, primitive forms of microlith and, as the type fossil, delicate tanged points, recalling those of the Polish Swiderian, but lacking the inverse retouch. The Ahrensburg industry was assigned by Schwantes to the pre-Boreal on purely typological grounds, but stratigraphical support was forthcoming almost immediately when Dr J. Andree of Münster excavated an identical flint industry from the Hohle Stein, near Callenhardt, Westphalia (Andree, 1932). In this cave the Ahrensburg industry was found to be associated with a transitional fauna including both tundra (reindeer, white grouse, arctic hare and arctic fox) and forest (red deer, roe deer, elk, wild pig, beaver, wood marten, etc.) species. The excavation also yielded a few artifacts made from organic materials—some pointed bones, a perforated reindeer phalange (a whistle?), a bone handle and perforated teeth.

A second significant discovery was the recognition in 1932 of a number of surface flint-sites in the Hamburg area, particularly along the course of the Alster in the neighbourhood of the village of Wellingsbüttel, the industry from which was distinctly Upper Palaeolithic in appearance. A leading feature was the excellence in blade production, the chief types (FIG. 1, nos. 9-16) consisting of keeled and end-of-blade scrapers, burins, shouldered points and so-called pronged instruments (*zinken*) or awls worked at one or both ends of blades. Specimens of the leading types were submitted to experts at the London Congress of 1932, and their Upper Palaeolithic character was generally accepted. Although the only evidence available at that time was typological, Schwantes did not hesitate to claim the existence in north Germany of a culture—the Hamburg culture—of true Upper Palaeolithic type, comparable, although distinct from, certain stages of the cave Magdalenian of France (Schwantes, 1932).

By 1932, then, it had been established that in north Germany there existed at the period of transition from tundra to forest conditions a distinctive lithic industry, the Ahrensburg industry, approximately contemporary with the well-known Lyngby axes, while there were definite indications of an even earlier stratum of population in the same area, represented by the Hamburg flint sites. Clearly one could get no further without excavation. It was necessary to date the two industries and to recover as much as possible of the components of the cultures as were made from organic materials.

As a glance at the maps (FIGS. 2 and 3) will show, the Hamburg-Kiel area straddles the margins of the Weichsel ice-sheet, both at its

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maximum extension (=Würm II of the Alps) and at the period of the Pomeranian stadium (=Würm III or Buhl). Such an area might be expected to favour correlations between Late Glacial and pre-Boreal cultures, and deposits dating back to the period immediately following the retreat of the ice and its final withdrawal to the Scandinavian peninsula. From these deposits one might hope to obtain a close

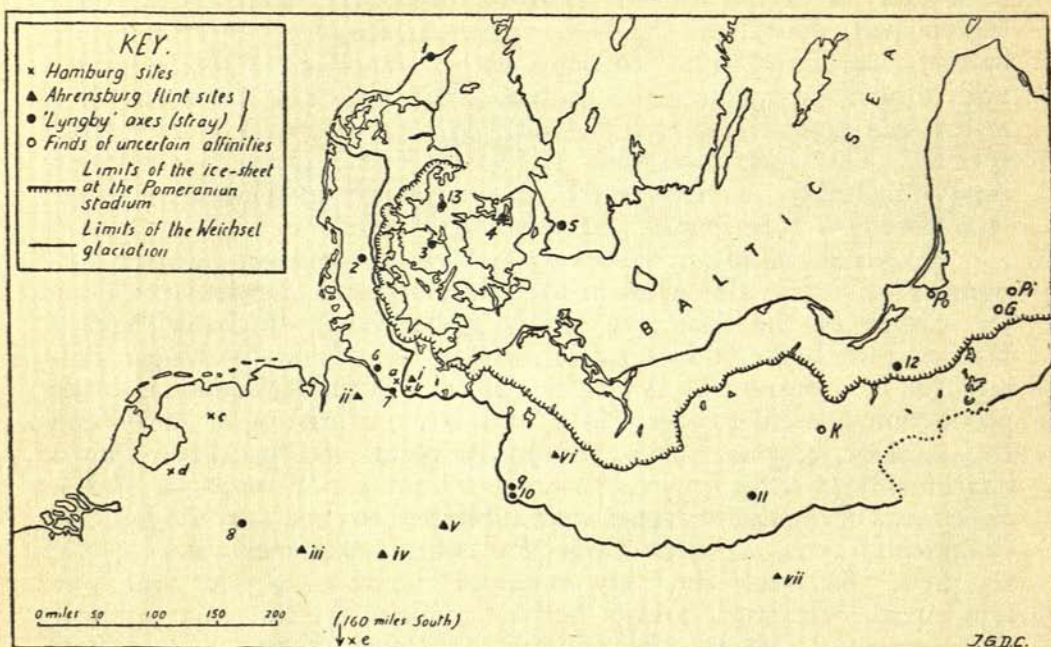


FIG. 2. MAP SHOWING THE DISTRIBUTION OF SITES OF THE REINDEER-HUNTING PEOPLES OF NORTHERN EUROPE OF LATE GLACIAL AND PRE-BOREAL AGE

nos. 1-13, Lyngby, Fovrup, Odense, Vejleby, Bara Lilla Mosse, Fahre Rusterbergen, Langenfelde, Haltern, Pritzerber, Briest, Murovana (all, Clark, 1936), Mitteldorf (Gross, 1937a), and Samsø I. (Nordman, 1936, 207); nos. i-vii, Ahrensburg (Stellmoor), Lavenstedt, Hohle Stein, Ellierode, Rieseberg, Borgsdorf, and Brustawe (all, Clark, 1936); nos. a-e, Wellingsbüttel, Meiendorf, Oosterwalde, Elspeet, and Schussenquelle; Po, Popelken (Clark, 1936); G, Gumbinnen (Gross, 1937b); Pi, Pilsballe (Gross, 1937c); K, Kulm (Gross, 1937).

N.B. For the many recently recognized Hamburgian Sites in Hannover and Oldenburg, see p. 163, footnote.

stratigraphical dating for each of the cultures, an accurate idea of the climate and vegetation contemporary with each, and, with good fortune, artifacts of antler, bone and possibly of wood.

In the search for sites which might be expected to provide such a correlation attention was early directed to the *tunneltäler* (valleys formed by streams of melt-water flowing under the melting ice-sheet), since the ponds and lakes that once existed along their courses must have

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attracted settlers to their shores, and the sequence of clays, muds and peats that have since filled them up might be expected to yield traces of such settlement in the form of peripheral 'scatter'. Such ponds—and it may be added many of the innumerable lakes still extant within the territory of the last ice-sheet of north Germany from Schleswig-Holstein to east Prussia—are thought by geologists to owe their origin

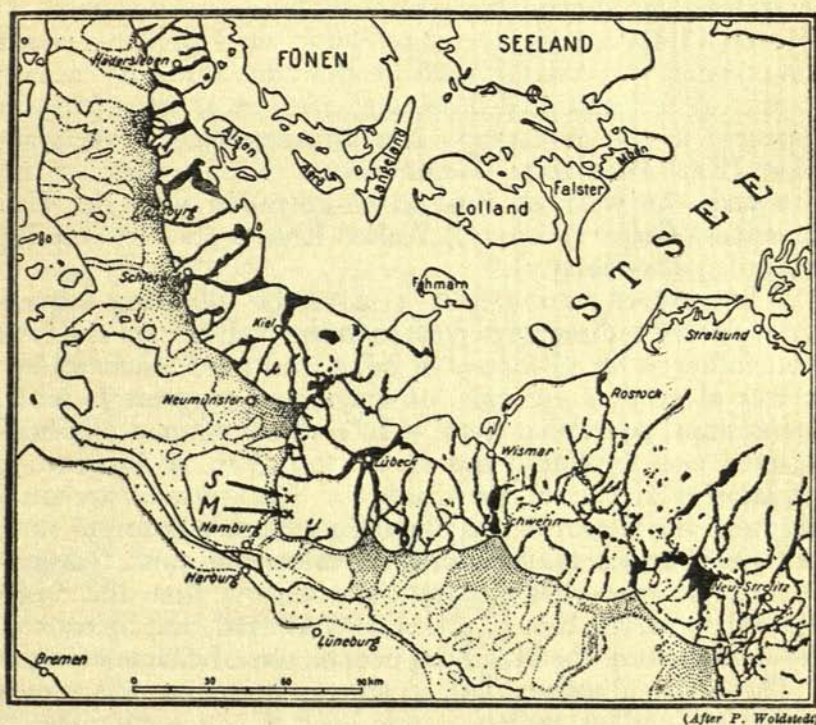


FIG. 3. SHOWING THE LIMITS OF THE WEICHSEL ICE-SHEET IN THE NEIGHBOURHOOD OF HAMBURG AND KIEL

The stippled areas outside the moraine indicate spreads of melt-water sands. The network of black lines within the moraine show the *tunneltäler*, many of which are occupied to-day by fjords or by inland lake systems. M=site of Meiendorf excavation. S=site of Stellmoor excavation.

to the melting of buried ice formed in the cold season in portions of the *tunneltäler* beyond the ice-margin, under the influence of cold winds blowing off the ice-sheet; such ice might become buried by gravels and sands outwashing in the warm melting season, and in some cases remain intact for centuries before melting and giving rise to water-filled depressions (Gripp, 1935 and 1937).

The site first selected (in 1933) for excavation was situated on the

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there is good reason to believe them historical, old stories are commonly assumed to be historical unless they can be proved to be fictitious . . . In the following pages I shall try to show that the "smoke" which arises from these oft-told tales is the outcome of mythical and not historical fires'. In other words Lord Raglan is out to debunk every personality in history for whom we have records which are not as precise as Whitaker's Almanack, Burke's Peerage or Thucydides: indeed, I doubt if he would accept even these tolerable standards of what he calls 'historicity' (dreadful word).

The trouble began when he first placed himself in a dilemma and then found himself furiously attacking the harmless onlookers who were enjoying the spectacle of the hunter caught in his own net. For the proposition he starts with is this: all myths are based ultimately either on historical truths or on purely fictitious fabrications, made to entertain and please. If they are based on historical truths no one has yet been able to prove it: if they are based on purely fictitious fabrications they are no use to the historian. Convincing himself that the scholars of the last half century have assumed the historical background of most myths because some appear to have a kernel of truth, he proceeds to show how every known story in which a famous character is involved is based on nothing but imagination. He will have nothing whatever to do with 'race-memory' and folk-tradition because he fails to detect any distinction between human beings and mere cattle. 'It has been held' he says, 'that the curiosity which is displayed in some degree by all human beings is evidence of ability to speculate; is the interest which a herd of cattle displays in a strange dog evidence of the ability to speculate'? Myths therefore are barely even the experimenting of imagination. They are mere mental wandering.

The view which he is opposing he summarizes thus: 'Whereas Euhemeros was content to claim that the gods had once been great men, it now seems to be generally held that such a thing as a purely mythical character has never existed'.

That, in brief is his position. He has made a complete Gleichschaltung of all mankind to one mental level; he has assumed that all myths are believed to contain history and he decides violently that all myths are myths, and that myths are, as such, almost worthless except as entertainment. King Arthur, all the personalities in Homer, Hengist and Horsa, one and all (and many more), are to be removed from the list of people who might once have existed.

But the trouble is that he makes so rigid an antithesis in his original proposition, he generalizes so furiously, that he fails to give himself even the faintest chance of escaping the explosions of his own petards. Who said that all myths were historical? who indeed was so foolish? Some are based on history, others are not. Why, one can see myths growing round the lives of real people, some of whom one knew personally. Was Dr Spooner a fabric of the imagination? does

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Mr Gladstone survive only in a list of speeches invented by some latter-day Thucydides? is George Washington only a kind of totem? Did Oliver Cromwell ever exist? Are Kitchener and Lawrence (like King Arthur) still alive? and who invented Mr Lloyd George?

Let us examine some of the mythological characters discussed here. King Arthur, admittedly one of our least promising mythological characters, whose historical quality has been attenuated almost to nothing, is now generally held by reputable historians to represent a kind of Romano-British Gunga-din, who took over local defence and used his military experience gained from the Romans to defend his country. A blameless hypothesis. And yet to Lord Raglan, Arthur survives only as a person 'whose property consists almost entirely of hills, rocks, and caves, where . . . he has to take his turn as godfather with the giants, the devil and Robin Hood'. By means of the same arguments Lord Raglan would deny any historical existence to Alexander the Great (whom I am surprised to see is not dealt with at length) and Oliver Cromwell. Yet the Alexander myths are far more widespread than the Arthur myths and I can show Lord Raglan mounds, caves and rocks attributed to Iskander Beg, ranging from Albania to Turkestan—geographically not far wrong as a distribution-map of his activities. But, because for Alexander we have Arrian and other written sources, he believes in his existence, while because for Arthur we have nothing comparable, he denies it. He cannot bring himself to believe that there really is often a difference between legendary characters like the Devil, and legendary characters like Priam and Agamemnon and Arthur and Alexander. It is all because he assumes that people cannot turn into legends, just because legends (like the Devil or Old King Cole) cannot conceivably turn into people.

Among the casualties I had expected to find King Minos of Crete, surely as preposterous a myth as was ever invented, and one in which even the Greeks did not believe. I suspect it is omitted because the author feels a lurking suspicion that there may be some truth in it. After all a large palace, a city to hold many thousands of citizens, bulls and labyrinths, all unfortunately dug up by archaeologists and quite visible to the eye, might faintly suggest that there was once a King Minos, or something sufficiently like one to upset his theory. So of Minos not a word. Instead, just to please the classical scholars he denies the 'historicity' of the Dorian Invasion. 'There are' he says, 'no facts to travesty. There is no reason to believe that the Dorians represent a later invasion . . . The story of the Dorian conquest was invented by the scholars to justify them in believing in the historicity of Homer, and this although the story receives confirmation neither from Homer nor from any other classical source'. Alas, poor Yorick, this is just sheer nonsense. A visit to a dozen Peloponnesian sites would cure Lord Raglan of his sad scepticism. Archaeologists are the

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most sceptical of all people. They are prepared to admit, even to Lord Raglan, that there is no kind of proof that Achaeans ever sacked Troy. But they are prepared to declare without ambiguity that Troy was sacked at a date when Homer believed to it have fallen, and that someone invaded Greece and ruined the Bronze Age World at a time when legend stated that the Dorian Invasion took place. But Lord Raglan is not in the least interested in archaeological facts. For that reason his book, though clear, incisive and determined, is I am sorry to say quite unacceptable to serious students, except in so far as it gives a well-needed jar to any of them who may be prepared to accept as sober history all the idle tales of later romancers. For them it will be salutary. For the archaeologist it is unnecessary.

STANLEY CASSON.

THE KING'S ENGLAND: KENT. Edited by ARTHUR MEE. Hodder and Stoughton, 1936. pp. XII, 506, 226 plates. 10s 6d.

This 'New Domesday Book of 10,000 Towns and Villages', of which the second volume is devoted to Kent, is likely to have a varied welcome, and it will either appeal cordially to the reader or else leave him in a state of apathetic indifference. Its aim is to describe at first hand and in alphabetical order a very large number of places, making in the Editor's words a 'unique picture of our countryside as it has come down through the ages, a census of all that is enduring and worthy of record'. In some measure it succeeds in fulfilling its purpose, but only too often a critical reader's idea of worthiness will not coincide with the Editor's. Here one must not look for documentation. The style is free, and its effect is gained by the use of familiar journalistic tricks rather than from the serious use of an historical background. For this reason, the compilers never quite succeed in gaining the confidence of a reader who wants something more than a mere travel-book.

Among the two hundred pictures are some of great merit as, for instance, the St. George fresco at Dartford, but many suffer badly from over-reduction. There is a tendency to include too much, a case in point being the twelfth century carving of St. Marcial at Bobbing, where the essential part of the picture is not as large as two postage stamps.

In a future edition, mention might be made of a few more prehistoric field antiquities. The hill-fort at Oldbury, Bigbury Rings, the lynchet cultivations on Godmersham Downs, the Roman road in Cobham Park, the magnificent untouched stretch along Barham Downs where there is also a cluster of Saxon grave mounds, the Bronze Age mounds on the cliffs at Ringwould, the barrows at Stowting and Shepherdswell, are all of general interest to the sightseer and easily accessible. At the same time, the inns of Kent, which here come off very badly, might be given their just due.

R. F. JESSUP.

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THE CLEAR MIRROR : a pattern of life in Goa and in Indian Tibet. By G. E. HUTCHINSON. pp. 171. Cambridge University Press, 1936. 8s 6d.

This is rather a curious book, and one difficult to classify. The author is by profession a biologist, and was attached to the Yale North India Expedition of 1932, under the leadership of Dr H. de Terra. In these three essays he attempts to portray not the scientific observations which he made, but the totality of impressions which impinged upon his senses at different points on his travels. It is within this totality that a 'pattern of life' is perceived. In the first essay, rather oddly entitled 'Spain at Sea', the author gathers up the emotional experiences of his journey eastwards, culminating in the mystery and beauty which he discerned amidst the Catholic shrines and Eastern temples of Goa. The second title, 'Painting on a Fan', once more evokes an image quite different from that presented by the text. The fan in question is one of the vast flattened semi-cones of alluvium which afford sites for settlement and for innumerable terraced rice-fields in the upper valley of the Indus. The note of colour is here supplied by the cataracts of blue turquoise which decorate the heads and shoulders of the Tibetan women : strangeness and mystery are added by the dances and processions of the lamas. The third essay, 'Lakes in the Desert', is perhaps the most interesting from the purely objective standpoint. It describes the peculiar and complex rhythms of life in the layered waters of the saline lakes, and in the snow-fed streams which flow beneath a burning sun. Even in this remote plateau-region ancient rock-inscriptions reveal alien cultural influences, while the profile and movements of the antelope *Pantholops* bring to the author's mind the old legend of the Virgin and the Unicorn which every medieval Bestiary used to tell afresh.

Gifted with a mind sensitive to beauty, and possessing a peculiar freshness and simplicity of outlook, Mr Hutchinson has written a book of unusual charm, and has succeeded in creating not only for himself but for his readers 'worlds of form replacing ill-spelt names on a map'.

E. G. R. TAYLOR.

GLASS FROM IRAN IN THE NATIONAL MUSEUM, STOCKHOLM.

By CARL JOHAN LAMM. Stockholm : C. E. Fritzes K. Hovbokh ; London : Kegan Paul. pp. 22, and 48 plates. 10s 6d.

The Swedish National Museum has recently been fortunate enough to acquire a representative collection of glass of medieval times made in Iran by Mr A. Hannibal, and the present volume is, in effect, a short general account of medieval Persian glass based on the material in that collection. Dr Lamm is at pains to insist that though some of the glasses in the Hannibal collection, especially many of the undecorated specimens, were probably made in Persia itself, there is every reason to suppose that others were manufactured either in

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Syria or in Egypt and imported thence to their find-spots in Iran. There is, as he points out, a very great difficulty in deciding the place of origin of individual glasses of this period found in Near Eastern countries. The result is that this book, illustrated as it is with line-drawings of the principal varieties in the collection, and in addition with photographic reproductions of the better preserved pieces, must form an indispensable reference-book of the types and decorative motives of Near Eastern glass of the medieval period, from about the 5th to the 14th centuries A.D. Considering its handy size, the book will be especially useful to field-workers on Arabic sites.

Dr Lamm's competence to deal with the subject in question was long ago proved by the appearance of his epoch-making work, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten* (1930, 2 v.). The present volume forms in many respects a necessary appendix to that work, for, as he himself remarks with regret, he was unable to inspect the Hannibal collection while *Mittelalterliche Gläser* was writing, and so perforce had to omit it from consideration at that time.

The introductory pages give, in a clear and concise fashion, a general description of the pieces in the collection on the basis of technique and decoration. It is perhaps a pity that a more detailed account of shapes and fabrics, including a statement of the basic colour of each piece, was not given, though the former can to a great extent be inferred from the admirably clear line-drawings and diagrams on plates 9-48, and the author has already described most of the latter in his *Mittelalterliche Gläser*. The book is written in English which, as we would expect from Dr Lamm, is almost faultless, and the printing and format are pleasing and adequate. One or two misquotations which were noted in the bibliography are misprints, and do not mar the scholarship of the volume as a whole.

D. B. HARDEN.

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Editorial Notes

MANY times already we have discussed Museums in these notes. We almost hesitate to return to this subject, for fear lest our readers may be bored ; but it is one of such outstanding importance that the risk must be taken. For Museums are essential to the study of local history and antiquities ; and without such there can be no understanding of national culture. The museum should be the rallying-point of all who are interested in the history and prehistory of their home-region ; it should help students and inform the general public. Its charge is a whole-time job. Its activities should include excavation and publication, as well as the primary function of conservation, and should be closely linked with the *normal* syllabus of education.



We shall describe and illustrate one of the functions successfully performed by museums in Germany, where they flourish as nowhere else, in the hope that the description may be found helpful and suggestive. We would gladly have selected examples from nearer home, had such been available. That must not be taken to imply that we have no good museums in Great Britain ; we have a few, whose excellence is due to the efforts of individuals rather than to official encouragement. Those who delight in odious comparisons are recommended to inspect the museums of Cologne, Kiel, Halle and Bonn, and the corresponding institutions in, say, Southampton, Portsmouth and Bournemouth. The comparison is a fair one, whatever standard be adopted.

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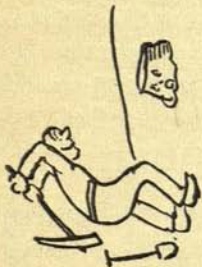
The Halle Museum authorities are responsible for two excellent illustrated posters aimed at the preservation of antiquities brought to light accidentally. The first (page 131) is concerned with the discovery of museum-objects, such as burial-urns, made in the course of some industrial operations. August Tropf (the equivalent of Bill Sykes) finds a cinerary urn (FIG. 1) and immediately smashes it in hope of treasure (2). Finding it contains only ashes and bones (3) he walks away in disgust (4), leaving the broken sherds to be discovered by his better-informed comrade, Klug (5), who collects them and takes them to the Clerk of the Works (6). He then carries them off to the museum, where they are laboriously put together by the official pot-mender (7); the urn is shown restored (8), and the site is reserved for excavation (9). August reaps his well-earned reward, not a fortune but 'Zigarre und 'nem gut Glas Bier' (10). Meanwhile the official excavator, Doktor Faust, is rapidly mobilized (11, 12), and gets to work on the site with the implements of his trade, recovering another urn from the cemetery site, this time intact (13, 14). It is triumphantly displayed, with the information that it was discovered during the construction of a Reichsautobahn (15); which may be regarded as the equivalent of a national arterial road. Prominently displayed at the foot is the *immediate action* to be taken in such cases—leave the finds undisturbed and immediately ring up the proper authorities, Halle 25851.

It should be noted that the provincial town of Halle contains two authorities which are concerned with such matters, the Museum and a body which has no equivalent in this country, the Landesanstalt für Volkheitskunde. It should further be noted that the Museum has on its staff as a matter of course both a pot-mender and a qualified excavator.

The second poster (page 133) seeks to enlighten the workman about the meaning and importance of such finds as prehistoric house-remains and burials. The illustration shows (top right) a gang of men at work on a Reichsautobahn. On the left are shown, diagrammatically of course, the plan of a wooden house, indicated by marks of post-holes and a stone-set hearth, and in the middle a stone burial-chamber with peristalith. Below are shown the restorations, with the added explanation in words—What do these finds signify? The homes and graves of



1. Bei Erdbarbeit sticht Waagen Zapf
 Einsetzen hier auf einen Zapf.



2. „Das muß doch wohl ein Gedicht sein“
Sagt er. „Denn das ist völlig falsch!“



1. O weh, es gibt hier nichts zu erben.
Es sind nur Asche, Knochen, Scherben.



4. Und wagt Tropf von Allvergnügen
Löst die Schmerzen einfach liegen.



5. Du kommst herbei dein Kamerad sing:
"Wird Euerher sind noch Wert gewalt!"



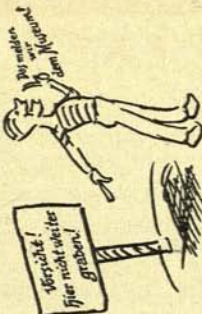
6. „Sie macht man doch vor einem Singen
Sundlich zu dem Heileum bringen!“



7. So sehr Ihr nun, wie man sie jetzt
mit Eifer und Eilm aufgenommen!



aus 50 Scherben zusammengesetzt!



9. Wenn Ihr die Kunde sorgsam schont,
So wird gewiß das auch belohnt.



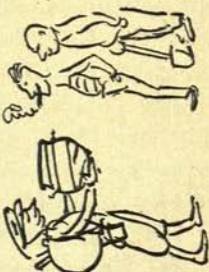
12. Jhr lebt, hier kommt der Letzter Jank
Reich vom Museum angekauft.



11. ഈ താലിഖ് ഞ്ഞു ചേർത്തു! -
 ഈ താലിഖ് - ഞ്ഞു താലിഖ്!
 ഞ്ഞു ചേർത്തു!



13. Sait Instrumenten und Gedacht
Er sich gleich an die Arbeit macht.



14. Stolz hält er din der Stille Sohn
Und nun erzählt er Euch davon:
Was er sagt dabet
Das findet Ihr auf Bogen stiel.



10. Klingt doch Ihr merket Millander. —
 Wo soll man's Geld auch nehmen her? —
 Doch reich's bestimmt, Das steht Ihr hier,
 Nur Sgarre und 'nem gut Glas Bier.



15. Und im Museum glänzt das Bild
 Ein jeder ruft: „O welch' ein Bild!“
 Wo fand man es?
 Auch das steht drauf:
 Gefunden bei der Heilmittelbahn.

Jeden Sund unberührt liegen lassen und sofort dem nächsten Museum oder der Landesanstalt für Volksheilkunde in Halle melden! Der Staatliche Vertrauensmann, Zernsprecher Halle 25851.

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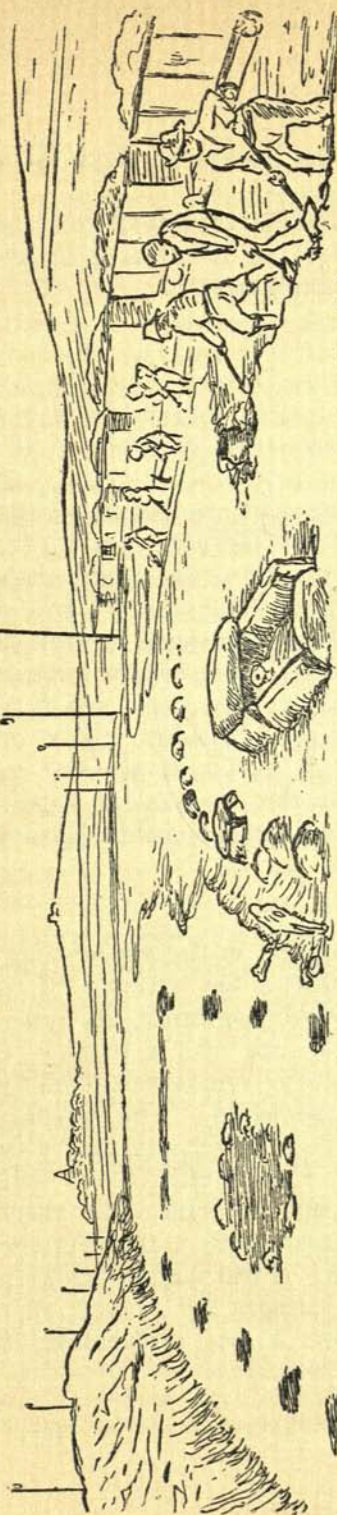
our ancestors. At the top the workman is told what to look for—Dark marks in the soil, animal-bones, potsherds, stone-settings, pots and such like things.

A more comprehensive pamphlet has been produced by the Reichs- und Preussischen Ministerium für Wissenschaft, Erziehung und Volksbildung, under the editorship of Dr Buttler, of Köln-Lindenthal fame. It covers the same ground as the leaflets, but is able to give more detailed information about various kinds of antiquities. The first two pages explain their importance as documents from which, and which alone, prehistory is constructed. All such finds should therefore be carefully preserved; excavation is a skilled task that should only be carried out under expert supervision. Objects of scientific importance should be given to the museum (*Gemeinnutz geht vor Eigennutz*). Information about such matters should be diffused as widely as possible.

The pamphlet illustrates and explains the character of certain common antiquities, such as Hünengraber ('dolmens', or burial-chambers, and megaliths in general), with examples of how not to treat them. Do not, for instance, build your pigstye upon a chambered barrow, as did an unenlightened farmer of Steinbeck (illustration given). Do not use the ramparts of camps as stone-quarries (as was done at Müllenberg), or allow pigs to destroy them by rooting up the surface (as at Gross Wechsungen). The prehistoric chieftain of Aschersleben never dreamt that on his grave-mound a memorial to Bismarck would be set up; nor would the founder of the Second Empire have approved.

There follow illustrated examples of the technique of proper excavation and conservation, of the visible signs of ancient remains (post-holes, pits in the sides of a quarry, dark occupation-layers in the soil), Roman roads and buildings, typical objects of the Bronze and Iron Ages. The importance of microscopic and chemical examination is illustrated. Finally there are two pages describing some of the purposes served by the careful preservation of minor objects: each has its place on a distribution-map, which itself leads to fresh knowledge. As an example there are given three sketch-maps of Silesia illustrating

Worauf muß geachtet werden!: Auf dunkle Stellen im Boden, Tierknochen, Scherben, Steinsetzungen, Gefäße und dergl.



unserer Vorfahren

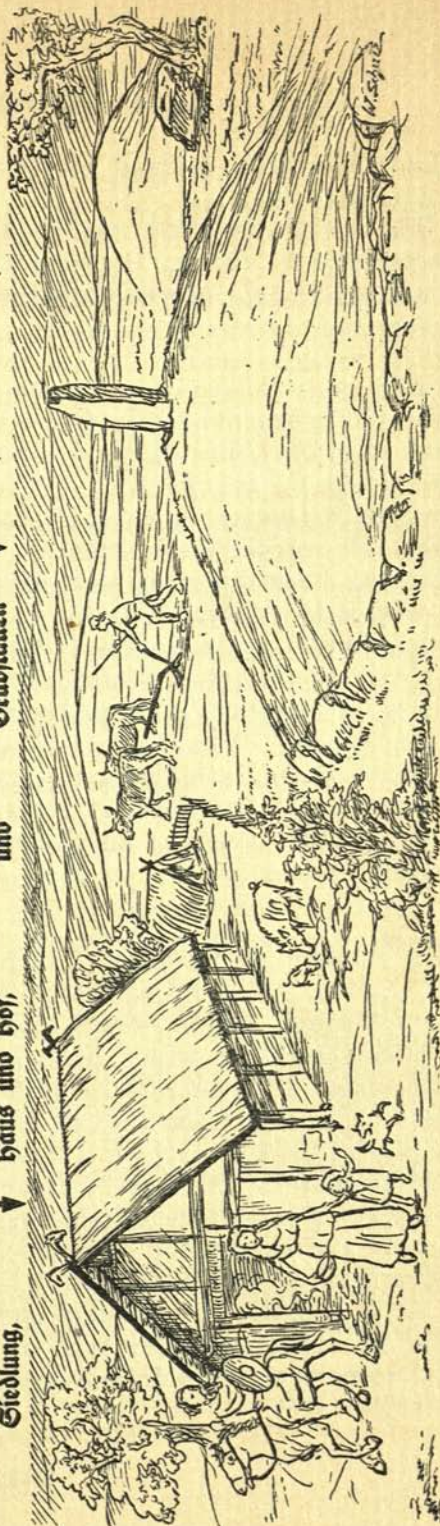


und Grabstätten

Was bedeuten die Sunde?



Siedlung, Haus und Hof,





Jeden Fund unberührt liegen lassen und sofort dem nächsten Museum oder der Landesanstalt für Volkseitskunde in Halle melden! Der Staatliche Vertrauensmann, Zernsprecher Halle 25 851.



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the Early Germanic finds in that province as known in 1896 (9), 1926 (52) and 1937 (147).

The authorities concerned are to be heartily congratulated upon a most useful publication. We hope that it will be distributed broadcast and will achieve the objects for which it is designed.



The conservation of antiquities in Great Britain is not neglected by the Government; indeed the work of the Ancient Monuments Branch of H.M. Office of Works has for many years past been a model of its kind, so far as it goes. What is lacking here is an organized effort to deal with chance finds and destruction, such as occur whenever digging takes place for industrial purposes. Hitherto such rescue-work as has been done has been mainly the work of voluntary associations and individuals. Without proper official endowment, and consequently without the qualified staff, our local museums cannot cope with situations that arise continually, and which will arise in increasing numbers. Moreover, even museums worth calling such are lacking over large areas. What happens is that valuable finds are made, often duly reported (for intelligent interest and goodwill are present more often than not); but there is no one to do the s.o.s. work required, the work has to continue on the site and its irreplaceable history is destroyed for ever.



An outstanding instance of such destruction is the gravel-digging round Oxford. It is tragic that, often within a few months of their recovery through Major Allen's brilliant air-photography, so many of these sites should be wiped literally off the face of the earth. The soil of England is the manuscript of its prehistory; once obliterated these priceless original documents can never be replaced. The air-photograph (where there is such) is a tantalizing record that cannot be fully interpreted without the help of excavation. Heroic efforts—all voluntary—are being made to save what may be; but the demand far exceeds the supply and meanwhile destruction advances with increasing speed as mechanical methods expedite the fell work. Future generations will curse us as heartily as we curse our predecessors for neglect of the national heritage, and they will bless those whose enthusiasm has rescued some fragments before it was too late.

Early Agriculture in Denmark¹

by E. CECIL CURWEN

THERE is perhaps no branch of archaeology of more fundamental importance than the study of the rise and development of agriculture, seeing that it has been the governing factor in the Natural History of Man from the time of its introduction down to the Industrial Era. But the study of the evidence from Britain is not enough; hence Professor Hatt's full and clear exposition of the Danish evidence is of special importance to British archaeologists, seeing that the rich discoveries preserved in the peat-bogs of Denmark can supply details that are missing in the British picture, or at least suggest to us directions in which future research may profitably be pursued. Professor Hatt's wide knowledge and balanced judgment—not to mention his delightful personality—have won the confidence and respect of those British archaeologists who have had the privilege of knowing him, and his recent book on Danish agriculture is far too important to be left in the relative obscurity of the Danish language. Hence a brief summary of its principal contents is attempted here.

Denmark itself has undergone physical changes, due largely to change of climate. In the Neolithic and Bronze Ages (say, 3000–500 B.C.) the climate was warm and dry, and the country was largely clothed with forest; this consisted at first mainly of conifers with an ever-increasing proportion of deciduous trees. With the Iron Age a colder and wetter period set in, accompanied by the gradual replacement of the forest by open heath with growth of heather. Since the immigrations which brought in the Neolithic culture the population of the country is said not to have undergone any considerable modification as regards blood or race, but has been culturally influenced from outside its borders, and has more than once been the source of emigrations.

CULTIVATED PLANTS

Between about 9000 and 3000 B.C. Denmark was inhabited by Mesolithic folk who lived by hunting and collecting the edible parts of wild plants. In deposits of the Mullerup culture (about 6000 B.C.)

¹ A summary of Gudmund Hatt, *Landbrug i Danmarks Oldtid* (Copenhagen, 1937); and Axel Steensberg, 'North-west European Plough-types of Prehistoric Times and the Middle Ages', *Acta Archaeologica* (Copenhagen, 1936), VII, 244–280.

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there is evidence that, besides game, certain wild plants and trees were staple sources of food-supply. These include hazel-nuts, seeds of the yellow water-lily, berries such as currants, raspberries, cherries, sloes, hips, haws, rowan-berries, bilberries, cowberries, blackberries, strawberries, together with crab-apples, vetches and dandelion. By way of comparison, certain central Australian food-gathering tribes of the present day have names for 62 wild food-plants, and the Polish botanist, A. Maurizio, has listed some hundreds of such plants that are indigenous in the countries of the north Temperate Zone, and has shown that 446 wild food-plants are known from ancient custom and use among civilized peoples there.

The cultivation of corn and the domestication of animals appear in Denmark at the beginning of the Neolithic period, about 3000 B.C. Though there is no essential connexion between these two activities, they both appear simultaneously in northwest Europe ; on the other hand, pottery had been found in the Ertebølle shell-mounds, before the arrival of any cultivated plants.

Thanks largely to the researches of Georg F. L. Sarauw and Knud Jessen, the list of plants cultivated in prehistoric Denmark is second only to that from the Alpine lake-villages. Sarauw searched for impressions of seeds on the surface of all the pottery found in Denmark, and was able therefrom to identify the plants concerned. His results, which he never lived to publish, are extremely valuable, for we in Britain can reasonably expect to arrive at similar results for our own country if similar methods are pursued. From pottery of the various periods Sarauw obtained the following results :

(a) <i>Neolithic</i>				No. of discoveries	No. of impressions
Einkorn wheat (<i>T. monococcum</i>)	..	..	..	2	21
Emmer wheat (<i>T. dicoccum</i>)	..	..	..	40	288
Dwarf or common wheat (<i>T. compactum</i> or <i>vulgare</i>)	..	..	..	24	46
Naked barley (<i>Hordeum coeleste</i>)	..	..	..	26	40
Husked barley (<i>H. vulgare</i>)	..	..	..	7	14
Bistort (<i>Polygonum</i>)	..	..	..	3	3
Apple	..	..	..	6	13

Taking the number of impressions of grain as indication of the relative proportions of wheat and barley cultivated during the Neolithic period, we find that 86.8 per cent. was wheat, and only 13.2 per cent.

EARLY AGRICULTURE IN DENMARK

was barley; moreover, of the wheat no less than 81 per cent. was Emmer, while the husked barley, to which modern varieties are related, forms only a quarter of the total barley.

(b) *Early and Middle Bronze Age* (1500-800 B.C.)

					No. of discoveries	No. of impressions
Husked barley	..	..	..	..	1	2
Bistort (<i>Polygonum</i>)	..	..	..	..	1	2

The poverty of finds in this period is explained by the rarity of pottery.

(c) *Late Bronze Age* (800-400 B.C.)

					No. of discoveries	No. of impressions
Emmer wheat	..	..	..	..	5	13
Dwarf or common wheat	..	..	..	..	9	9
Naked barley	..	..	..	..	68	108
Husked barley	..	..	..	..	53	104
Millet (<i>Panicum miliaceum</i>)	..	..	..	..	6	5
Oats (<i>Avena sativa</i>)	..	..	..	..	3	4
Wild oats (<i>Avena fatua</i>)	..	..	..	..	2	3
Bistort	..	..	..	..	19	25
Pea	..	..	..	..	2	2
Bean (<i>Vicia faba</i>)	..	..	..	..	1	1

We now find the relative proportions of wheat and barley reversed: barley forms 87 per cent. of the total grain, and wheat only 9 per cent.; husked barley is beginning to catch up the naked variety, but Emmer still predominates among the wheat. We now have two new grains appearing, viz. millet and oats, each forming about 2 per cent. of the whole. Millet, of which two actual grains have also been found in a bronze vessel belonging to the Late Bronze Age, requires a warmer climate than that which has prevailed in Denmark during historic times.

(d) *Pre-Roman Iron Age* (400-1 B.C.)

					No. of discoveries	No. of impressions
Dwarf or common wheat	1	1
Naked barley	7	25
Husked barley	5	5
Millet	1	1
Bistort	25	123

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The totals here are too small to draw reliable conclusions from them. We note, however, that barley—especially the naked variety—is still by far the commonest grain, and that millet is still found. The high proportion of *polygonum* suggests the possibility that this weed may have been cultivated.

(e) Early Roman Iron Age (A.D. 1-200)

					No. of discoveries	No. of impressions
Dwarf or common wheat	..	..	..	..	4	4
Naked barley	..	..	..	..	37	60
Husked barley	..	..	..	..	57	133
Oats	..	..	..	..	16	32
Rye (<i>Secale cereale</i>)	..	..	..	..	8	11
Wild oats	..	..	..	..	2	7
Bistort	..	..	..	..	29	56
Pea	..	..	..	..	1	1

Once more barley is predominant, forming 80 per cent. of the total cereals, but now it is the husked variety in the proportion of more than two to one over the naked. Wheat, from which Emmer has finally disappeared, forms less than 2 per cent. of the total, while the proportion of oats has risen to 13 per cent. Rye appears for the first time, and accounts for about $4\frac{1}{2}$ per cent. of the whole. Once more we note the prominence of the weed *polygonum*, which can scarcely be accidental.

(f) Later Roman Iron Age (A.D. 200-500)

					No. of discoveries	No. of impressions
Dwarf or common wheat	..	..	..	..	4	6
Naked barley	..	..	..	..	16	40
Husked barley	..	..	..	..	41	149
Oats	..	..	..	..	13	13
Rye	..	..	..	..	9	15
Wild oats	..	..	..	..	2	2
Bistort	..	..	..	..	22	45
Flax (<i>Linum usitatissimum</i>)	..	..	..	..	2	17
Bean	..	..	..	..	2	?

This list resembles the preceding; barley forms nearly 85 per cent. of the total cereals, and the husked variety is now nearly four times as

EARLY AGRICULTURE IN DENMARK

common as the naked. Wheat forms less than 3 per cent. of the whole, oats nearly 6 per cent., and rye nearly 7 per cent. *Polygonum* is still prominent, and flax appears for the first time.

Pottery from the post-Roman Iron Age (A.D. 500-1000) is rare, and therefore not more than a dozen impressions of seeds have been found. These consist of barley, rye and the inevitable *polygonum*.

It is noteworthy that the warm-loving wheat was in the ascendancy during the warm sub-Boreal period, and that in the colder and wetter phase of the Early Iron Age it was not only replaced by the hardier barley, but also by oats, which was originally a weed infesting Emmer wheat, and by rye, which was also a weed—both oats and rye being capable of standing a more rigorous climate than wheat.

There is reason to think that certain native wild plants may also have been cultivated in Denmark. We have noted the remarkable frequency of the occurrence of *polygonum* seeds in the foregoing lists; of these the pale-leafed bistort is the commonest (*Polygonum tomentosum*), but *P. persicaria* and *P. convolvulus* also occur. The seeds of this last were used for making porridge in Germany as late as the last century, and in Russia and Sweden have been used for fodder, and even for distilling instead of grain. *Polygonum* seeds have also been found in quantities in the Swiss lake-dwellings.² Knud Jessen has also shown that the white goosefoot (*Chenopodium album*) was probably cultivated early in the Bronze Age; the leaves have been used in historic times as cabbage, and the seeds have been ground with corn for bread, but have a certain laxative effect.³

Sarauw's researches have since been augmented and confirmed by discoveries of quantities of carbonized grain and other seeds in carefully excavated dwelling-sites. In one of these, dating from the Roman Iron Age, a collection of nearly half a pint of the oleagenous seeds of 'gold of pleasure' (*Camelina sativa*) was found in the bottom of a large jar of 9 gallons capacity. This plant is a weed in fields of flax, but was actually cultivated as early as the Neolithic period in Hungary, and was used for flavouring bread as late as the 18th century in Denmark. The seeds contain 30 per cent. of oil, which can be used either as food or for light, and it is considered that it was cultivated in northern and western Jutland in the pre-Roman Iron Age.⁴

² C. P. Johnson, in *The Useful Plants of Great Britain*, pp. 218-222, gives a full account of the uses and recent cultivation of the different varieties of *Polygonum*.

³ *ibid.* pp. 216-7.

⁴ *ibid.* pp. 27-8.

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interparietal depression clearly ends at the lambda without any trace of a continuation on the gently-convex occipital bone.

In front view (PLATE III), the relative narrowness of the frontal region is remarkable, and the slight longitudinal median keel in its upper and hinder part is conspicuous. The remains of the face suggest that it was short and broad. The thickening of the prominent supraorbital border is greatest mesially, but it is not continued into a ridge above the nasion. This thickening suggests that the skull belongs to a male individual. The plane of the glabella passes gradually downwards into that of the nasal bones, without any intervening depression, and no sutures are visible in this part of the fossil. The interorbital width is considerable, not less than 30 mm., and the nasal bones are noteworthy for their sharp bending upwards and forwards in their lower half. The large orbit, as shown on the left side, must have been wider than high, about 44 mm. in width and 38 mm. in height; its upper outer angle is nearly a right angle. The anterior end of the zygomatic arch is unfortunately too much broken to exhibit its original shape.

Although the skull is shorter and wider than the ordinary skulls of Bushmen, its proportions are not very different from those of a few exceptional examples (PLATES V-VII). It resembles the Bushman in (1) the fulness of the frontal region, and the slight longitudinal keel in its upper part; (2) the flattening of the middle part of the cranial roof; and (3) the prominence of the large parietal bosses, and the median longitudinal depression between these bosses. It also agrees in (4) the wide quadrangular shape of the orbit; (5) the low elevation of the squamous part of the temporal bone; and (6) apparently in the small size of the mastoid process. It differs chiefly in the greater prominence of the supraorbital ridges, and in the forward curvature of the nasal bones, which indicate a less shortened facial region. It may, indeed, be regarded as belonging to an ancestral Bushman in which the face was not yet shrunken.

The new specimen differs from all human skulls hitherto described as found fossil in north Africa, but it seems to resemble a little some skulls in the varied collection made by Dr C. Arambourg from an Upper Palaeolithic deposit in the rock-shelter of Afalou-bou-Rhumel on the coast of the Gulf of Bougie in northern Algeria.¹ It agrees

¹ M. Boule and H. Vallois, 'L'Homme fossile d'Asselar (Sahara)', Archives Inst. Paléont. Humaine, Paris, Mém. 9, 1932. C. Arambourg, M. Boule, H. Vallois, and R. Verneau, 'Les Grottes Paléolithiques des Beni-Segoual (Algérie)', *loc. cit.*, Mém. 13, 1934.

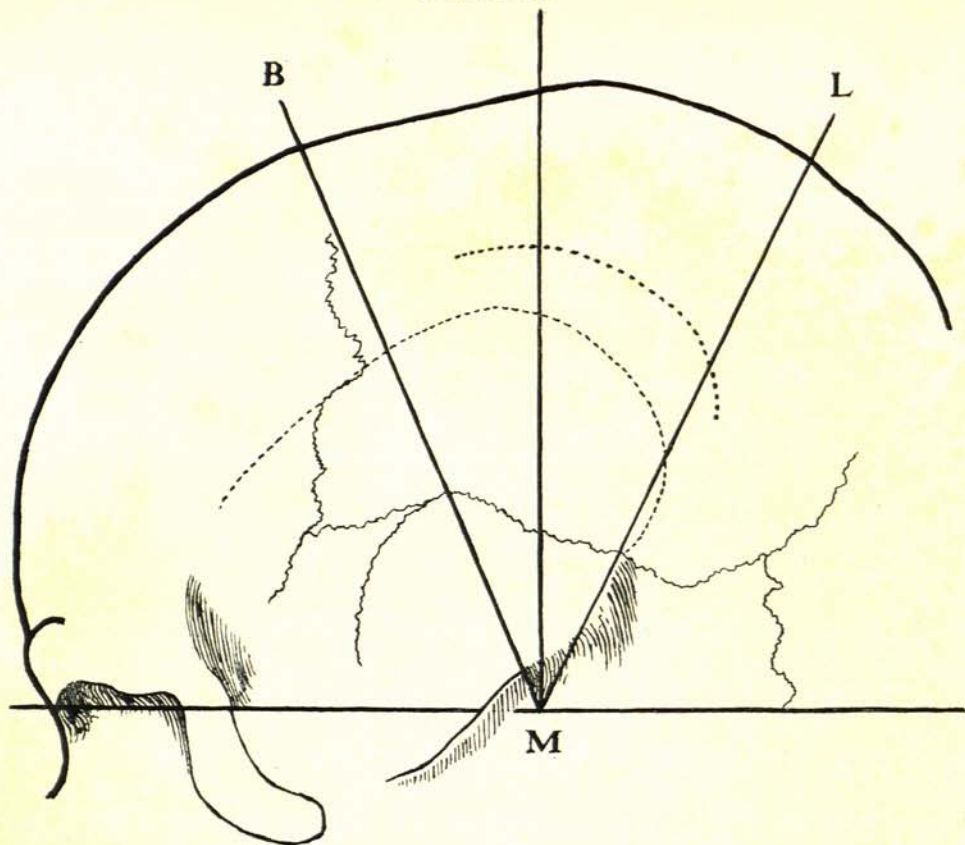
PLATE I



FOSSIL HUMAN SKULL FROM SINGA, SUDAN

Upper view, nearly on the Frankfurt plane; about five-sevenths natural size

PLATE IV

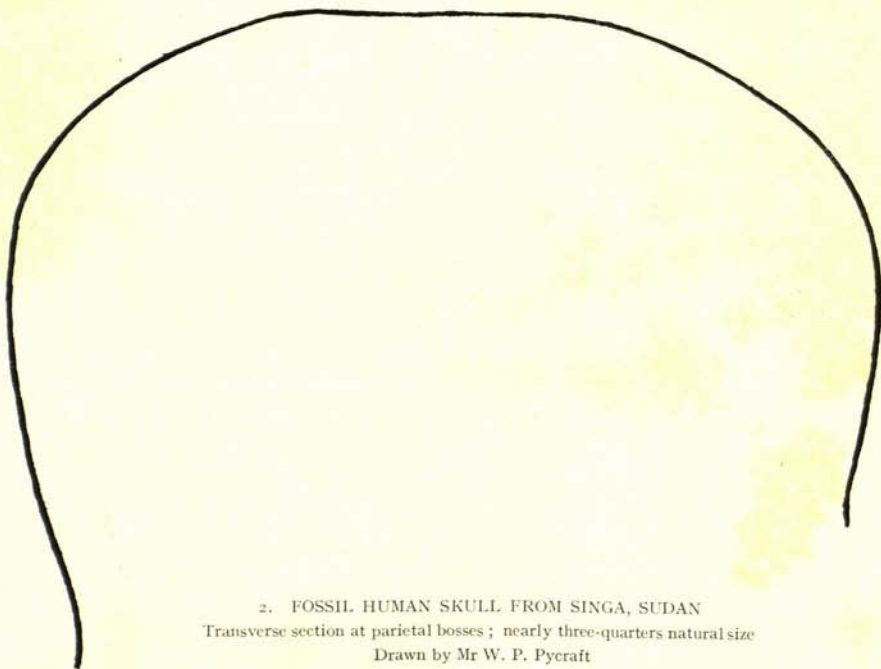


1. FOSSIL HUMAN SKULL FROM SINGA, SUDAN

Diagram of side view based on the nasion-meatus line; nearly five-sevenths natural size.

B, bregma; L, lambda; M, meatus

Drawn by Mr W. P. Pycraft

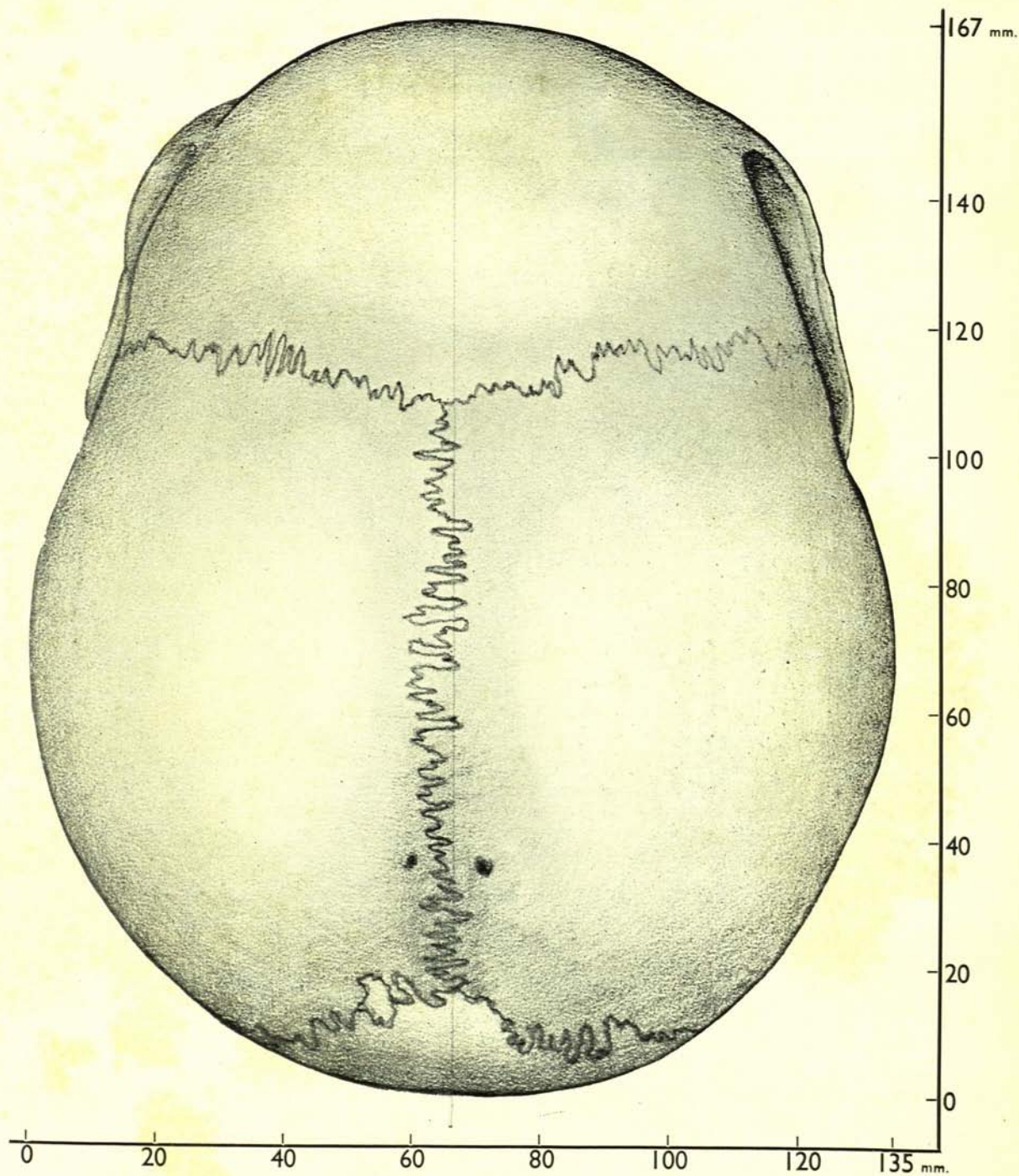


2. FOSSIL HUMAN SKULL FROM SINGA, SUDAN

Transverse section at parietal bosses; nearly three-quarters natural size

Drawn by Mr W. P. Pycraft

PLATE V

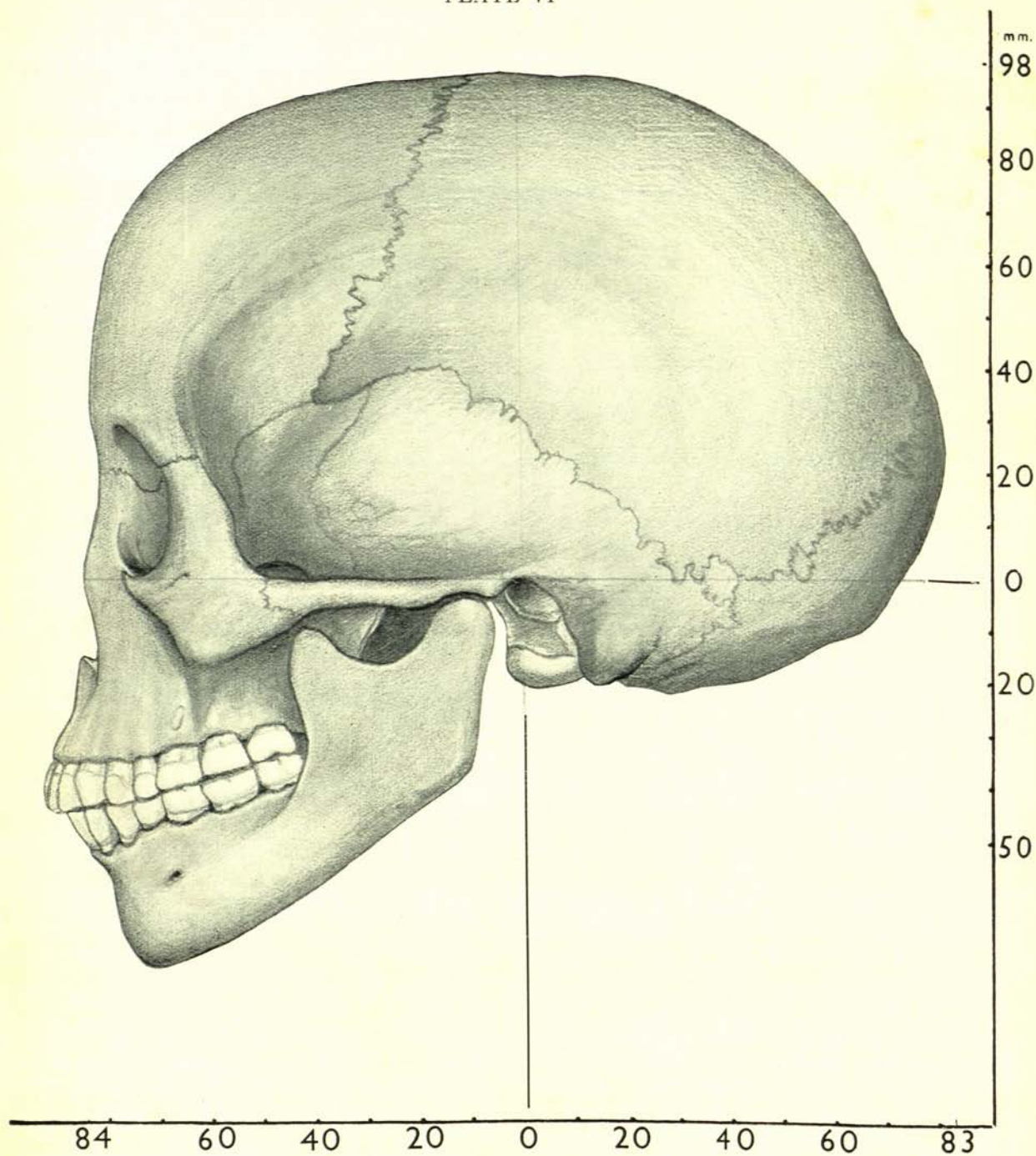


BRACHYCEPHALIC SKULL OF A BUSHMAN (No. 1300.1, ROYAL COLLEGE OF SURGEONS, LONDON)

Diophtographic drawing by Dr A. J. E. Cave, in upper view

By permission of the Royal College of Surgeons

PLATE VI



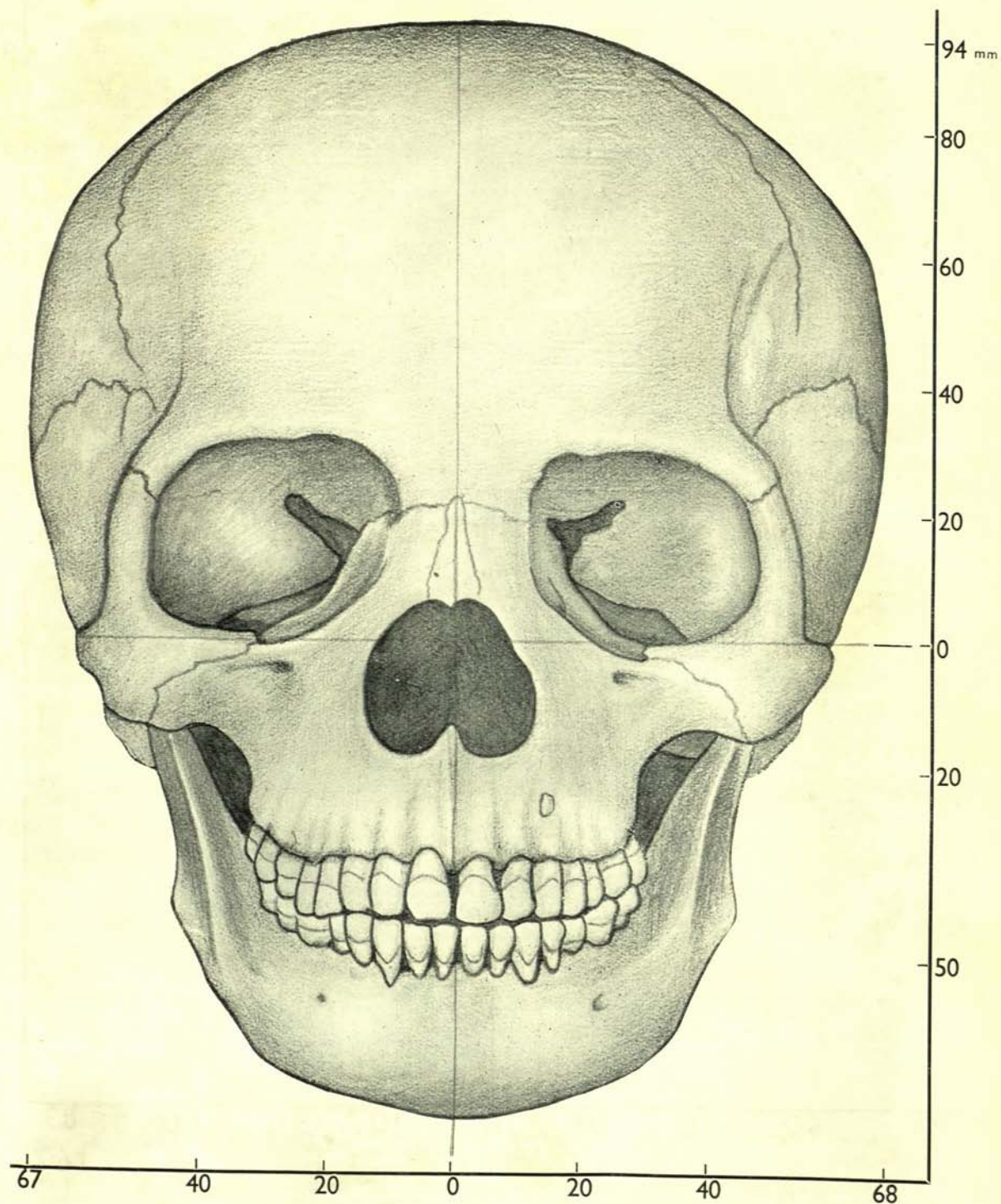
BRACHYCEPHALIC SKULL OF A BUSHMAN (No. 1300.1, ROYAL COLLEGE OF SURGEONS, LONDON)

Dioptrigraphic drawing by Dr A. J. E. Cave, side view, on the Frankfurt plane

By permission of the Royal College of Surgeons

167 mm

PLATE VII



BRACHYCEPHALIC SKULL OF A BUSHMAN (No. 1300.1, ROYAL COLLEGE OF SURGEONS, LONDON)

Diophtographic drawing by Dr A. J. E. Cave, front view, on the Frankfurt plane

By permission of the Royal College of Surgeons

A FOSSIL SKULL OF AN ANCESTRAL BUSHMAN

especially with no. 12 of this collection in its pentagonoid form, with an interparietal depression, prominent supraorbital ridges, and wide quadrangular orbits ; but it differs in being brachycephalic instead of mesocephalic, in having a less retreating forehead, no marked depression below the glabella at the upper end of the nasal bones, and relatively small mastoid processes.

It is interesting to observe that in its most important features, the Sudan fossil agrees still more closely with the fossil Boskop skull which was found in 1913 in the Transvaal, South Africa.² Its calvaria, indeed, may be described as a brachycephalic variant of the Boskop type. The ancestors of the Bushmen, or Proto-Bushmen as they have been termed, were therefore distributed very widely in Africa from the north to the south, and they formed a vigorous race of normal bodily proportions. The modern Bushmen, of smaller size, with a reduced face completely beneath the protuberant brain-case, are degenerate survivors who have retreated to a comparatively small area where the circumstances of life are difficult.

NOTE ON THE GEOLOGY OF THE SINGA DISTRICT OF THE BLUE NILE

by G. W. GRABHAM

Geological Adviser in the Anglo-Egyptian Sudan

The Blue Nile south of Khartoum traverses a plain formed of wind-deposited clay whence the dark cracked cotton soil of the Gezira plain has been derived. This clay often rests on earlier river deposits, so there is evidence of an interruption in the flow of the river. At Singa, where the fossil human skull was found, the Blue Nile has cut a new valley through these deposits, exposing them as almost vertical cliffs or steep slopes behind banks of recently formed alluvium (p. 194).

The sequence of deposits is :—

- 1 Modern Nile river deposits
- 2 Local stream beds
- 3 Younger or upper wind-borne clay
- 4 Older river deposits
- 5 Older or lower clay

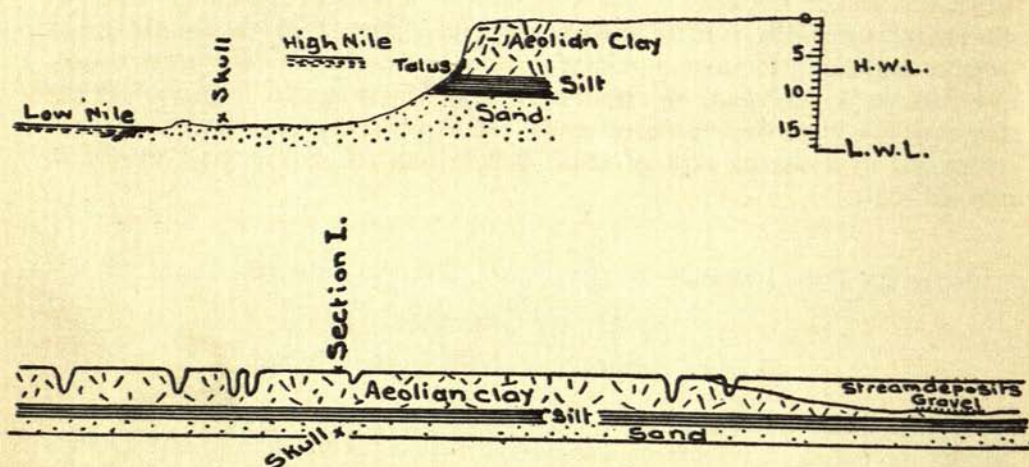
² S. H. Houghton, ' Preliminary Note on the ancient Human Skull-remains from the Transvaal ', *Trans. Roy. Soc. South Africa*, 1917, vi, 1. W. P. Pycraft, ' On the Calvaria found at Boskop, Transvaal, in 1913 ', *Journ. Roy. Anthropol. Inst.*, 1925, LV, 179.

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The wind-borne clay (3) contains fine-grained concretions of carbonate of lime which are larger as the depth increases. Concretions of calcium carbonate have also been formed in the older alluvial sands and silts (4), each characteristic of the deposits in which they have been formed. In the sand they are root- or branch-like, while in the silt they are round or oval in shape and incorporate silt. Besides the

(1.) Section of River Bank at Singa

Horizontal Scale 1 cm. : 20 mts Vertical Scale $\frac{1}{1000}$



(II) LONGITUDINAL SECTION OF RIVER BANK AT SINGA

Horiz. Scale 2 cms. : 100 mts.

Vert. Scale 1 cm. : 20 mts.

concretions which have been formed *in situ* the older river-deposits contain layers of concretions of a fine-grained type evidently derived from an earlier clay (5) which is not exposed. The current having washed away the clay and silt, the bed of the river seen at low stage is lined with a layer of the less easily moved concretions and conglomerate masses. It was among these that the fossil human skull was discovered embedded in a conglomerate of the fine-grained type of lime nodule. Though one cannot point out the position whence the mass containing the skull was derived, it probably had not moved

A FOSSIL SKULL OF AN ANCESTRAL BUSHMAN

far. Moreover there is a horizon about two or three metres below the top of the older river deposits (4) with other bones similarly mineralized and associated with the same kind of conglomerate. There can be little doubt that the skull was contained in this horizon, but as with the bones we cannot say whether it belongs to the time when the deposit was formed or whether, like the limestone concretions, the skull and the other bones have been derived from an earlier deposit. Hippopotamus, buffalo and a siluroid fish are represented among the bones, but they do not permit the geological age to be determined. The skull cannot be younger than the older river deposits (4) and may have been derived from yet older deposits. The younger or upper wind-borne clay (3) covering the older river deposits probably represents a considerable period of time. While at present I have no basis on which to estimate the date at which the Nile as we know it began to flow, yet I venture the opinion that the historic times of Egypt, say about 5000 years, cover a considerable part of this interval and that the total may not exceed double this period.

The Simian Basis of Human Mechanics or Ape to Engineer*

by EARNEST A. HOOTON

Peabody Museum, Harvard University

MY subject should not be construed by the refined as a malicious innuendo, nor by the vulgar (unrepresented here, of course) as a 'dirty dig'. The transition from ape to engineer is from the ridiculous to the sublime—or, at any rate, from a little short of one to a little short of the other. This handsome statement must serve as my panegyric on mechanical science. As an anthropologist, I am perturbed by the fact that human invention has outstripped man's organic development, and his control of nature his control of himself. So I propose to discuss the organic basis of mechanical achievement and the cause of man's physical and social lag in relation to his material progress.

THE ANATOMICAL ANTECEDENTS OF THE CULTURED ANIMAL

Man is the only cultured animal, and human culture is but the product of a superior animal organism. We must examine the paradox of a living being which creates inanimate things more powerful and more nearly perfect than itself, with potentialities either for the salvation or the destruction of the inventor. The human organism is no up-to-date machine. It is like a horseless buggy which has undergone a series of reconstructions. The tires are flat; the body is battered and obsolete, however much paint may be smeared on the radiator; but the engine still runs and the machine still advances, as long as the steering gear works. Abandoning this simile, which is only a sort of sop to engineers, I will recall the successive stages of human evolution, beginning with the lowest members of our primate order, who were already in existence some sixty millions of years ago. First we have a long-snouted, small-brained, tree-dwelling quadruped, about as large as a squirrel, equipped with five flat-nailed digits on hands and feet, of which the innermost—thumb or great-toe—can grip one side of a bough, while the outer four digits grip the other. This is the lemuroid stage. Next we have another small animal which sits erect in the trees, having specialized its hind limbs for

* The Tenth Henry Robinson Towne Lecture. Delivered at the Annual Meeting, New York, N.Y., Dec. 6-10, 1937, of the American Society of Mechanical Engineers. Reprinted from *Mechanical Engineering* (New York City) for January, 1938, by the kind permission of the Editor and of Professor Hooton.

THE SIMIAN BASIS OF HUMAN MECHANICS

support and for hopping, while its grasping hands are used to feed itself and explore its surroundings. This beast has a shrunken snout with eyes which are moving from the sides of the face to the front, so that both can focus at the same time upon an object being carried to the mouth. The brain is larger and the head, with its shorter muzzle, is less ill-balanced upon the end of the upright spine. This is the tarsioid stage.

Next we have a considerably larger animal, with hands capable of encircling thicker boughs, which tends increasingly to move by swinging from one hand hold to another, the body suspended by the arms, and the legs trailing. The snout has continued to recede; the eyes are completely frontal, and stereoscopic vision, which gives depth and perspective, has arrived. There is the rudiment of a brow and the tail has shrunk to a vestige. The ears are no longer erect, mobile, and pointed, but crumpled to the sides of the head; the viscera are hitched up with sheets of membrane to keep them from sagging when the trunk is vertical. I have described a telescoped, super-monkey, sub-ape stage of primary evolution. Next this animal, having become too large, too hungry, or too smart for life in the trees, takes a chance on the ground. In order to see the better and to have its hands free for fighting and feeding, it rears up and stands upon its unsteady legs. The flexible, prehensile feet gradually become strengthened to bear the weight of the body; the lesser toes shorten and the great toe loses its thumb-like mobility so that the foot can no longer grasp. The legs become longer and more powerful; the pelvic girdle expanded and flattened as a transmitter of total body weight and a framework for attachment of the great muscles used in standing and walking. The spine gets a forward kink above the pelvis which serves to erect the trunk; the tail remnant has sunk beneath the buttocks and forms a part of the pelvic floor; the chest has been flattened from front to back by altered gravitational pull; the arms have become shorter and the hand refined from locomotive duties; the tip of the thumb can now be opposed delicately to the tips of the outer fingers. The teeth have become so reduced that the lips are outrolled; the bony nose with its fleshy tip has grown and bloomed; the eyes, formerly recessed under a jutting bony shelf, now peer from beneath the base of an incipient dome; the brain case has exceeded the size of a grapefruit and now resembles an overgrown cantaloupe. This nearly human animal is all ready to contrive tools and to use them, thus beginning a career as master mechanic of the animal kingdom, which makes him, perhaps, in the course of a million years, a member of the American Society of Mechanical Engineers.

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All of the items of organic equipment which have enabled man to produce the marvels of mechanics are a part of his primate inheritance. The first are the sensitive mobile hands with their opposable thumbs. The grasping extremities, hands and feet, with their five digits, are an ancient vertebrate character, observable in a crude form in some reptiles. In the little lemurs the great diameter of average tree branches, relative to the size of the prehensile hands and feet, forces them to plaster the palms and soles tight against the bough, with the inner digits directed at an angle of almost 180 degrees with the outer four. Often the index finger is reduced to a stump. There is little development of manipulative skill in the users of this clinging or perching grasp. When primate animals of larger size develop, the rotation of the thumb and its opposability to the finger tips begin to come into tactile and exploratory use. In the larger monkeys and apes the hands are big enough to permit a large and heavy object to be held in one, while the animal tears at it with the other or with its teeth. But the tree animal has to sit up to have its hands free for feeding, fighting, or other purposes. Having to sit up or down in order to use your hands is not conducive to two-handed experimentation or to the making of tools, when you are perched precariously in a tree. A sitting monkey usually holds on with both feet and one hand, and has but one free prehensile member, unless equipped with a grasping tail. On the ground some macaques and baboons may stand on three extremities and pick up objects with the free hand, but whether in arboreal or terrestrial life, one free hand is not enough.

Sitting up develops balance and encourages the animal to use its eyes rather than its nose. It takes the eyes off the ground and enlarges the range of vision. No mechanical achievement springs from developing the primitive sense of smell. On the other hand, acuity of vision, the ability to judge distances accurately and to record impressions of form, to remark relations and generally to observe, are primary requisites for an animal which is to become a mechanic. It is at this point, possibly, that the brain begins to step in and play a preponderant role in the coordination between the eyes and the hands which ultimately results in the creation of a material culture. Next to the sensory and motor areas of the nervous covering of the brain, there grow up regions in which movements are pictured, and beyond them, probably, those mysterious brain tracts which provide for association, memory, and creative thinking.

But no animal up a tree can initiate a culture. The realization of the possibilities of stereoscopic vision, emancipated hands, and an elaborate nervous organization had to await the descent to the ground.

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In arboreal life the animal must ever contend against gravitation, be on the alert to maintain his balance. He has no firm footing. Our ancestors, wisely or fortunately, descended from the trees and eventually stood upon their feet on the ground. The stabilized supporting foot is nearly as essential for tool producing as are the free hands with their opposable thumbs. For no effective use of tools or weapons would have been possible for an animal which suspended itself by the arms from the trees, or for one which stood and moved on the ground on all fours. It was quite as necessary that the foot be remade as that the hand preserve and perfect its primitively mobile digits. The adaptations undergone by the spine, the pelvis, the lower limbs, and the foot, enabled the animal to get his whole body into a single vertical axis and to poise the centre of gravity over the bipedal base of support. This base of support could be widened or lengthened by shifting the feet, according to the exigencies of the ground surface, or the balance required by varied movements and positions of the arms and torso, in the carrying of weights, the wielding of tools or other manual activity. Moreover, the erect posture and biped gait, as a result of perfected arrangements of the bodily mechanics, soon became so effortless and so automatic, that the animal acquired the ability to walk or run while still employing the hands in unrelated and skilful movements. The locomotor and supporting appendages were emancipated from the prehensile members.

Thus it appears that before a primate can become an engineer he has to have a series of very complicated engineering jobs done upon him by a firm of biological engineers which we may call Variation, Adaptation, and Natural Selection, Unlimited.

REFLECTIONS OF PREHUMAN MECHANICS IN ANTHROPOID APES

A clearer understanding of the primate background of human mechanics may be gained from the study of the use of implements in monkeys and apes. Prof. Robert E. Yerkes, of Yale, an authority on primate behaviour, does not think that primates below the level of monkeys make any use of movable objects as tools or implements. There is no doubt that some monkeys display considerable dexterity in the handling of objects. However, Yerkes has known intimately only one monkey which he considered had an aptitude for the use of implements, and this gifted individual merely played with human tools. De Haan, however, experimented with an American monkey which, in the use of a variety of implements, was judged to be more intelligent than any anthropoid ape except the chimpanzee. Most of the experiments of

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psychologists have as their object the testing of the intelligence of an animal, by setting it a problem which may or may not require for solution the manipulation of objects in a purposeful way. The use of tools is usually only incidental to the problem.

Experiments with the gibbon, the small anthropoid ape, seem to indicate no more mechanical ability on the part of that animal than is displayed by monkeys. Given a rake with which food may be secured, the animal will draw in the food if the latter is in front of the rake, but will not attempt to place the rake behind it for the purpose. Dr C. R. Carpenter states that the gibbon, which has very long fingers and a very short thumb, makes comparatively little use of the latter in handling food or other objects. The short thumb is pressed against one of the middle joints of the fingers rather than opposed to the tips, and instead of picking things up by gripping them directly between finger tips and thumb, the gibbon uses a sidewise scooping method.

On the whole, the gibbon is narrowly specialized for tree locomotion. Its arms are so long that they reach the ground when the animal stands erect. It swings by its arms from bough to bough and from tree to tree, easily clearing spaces of twenty feet. Although the great length of the upper limb is a mechanical advantage in moving the body weight by brachiation (arm-swinging), it is decidedly the reverse in the skilled handling of objects. Such long arms require too much elbow room, and the very extension of the forearm, which is the fixed lever in arm locomotion, interferes with quickness and precision of movements when the hanging upper limbs are flexed in lifting objects and the forearm becomes the movable part of the lever. But it is mainly deficiency of brain and not excess of arm which prevents the gibbon from being an engineer.

The orang-utan, a much larger and stronger animal, is also handicapped in tool using by excessively long arms and short thumbs. However, this ape is easily taught such high human accomplishments as eating sliced bananas with a fork, lighting a cigarette, riding a bicycle, driving nails, and selecting the right Yale key with which to unlock a box. One of Hornaday's orangs used the bar of his trapeze as a lever to enlarge the opening between the end bar of his cage and the concrete partition, so that he could get his head through and look into his neighbor's house. Thus curiosity is the father of invention. Often orangs twist the straw from the cage floor into ropes, and use them for swinging from trapeze bars. Yerkes set a problem for his orang-utan, Julius, in which the animal was supposed to pile up boxes beneath a banana suspended out of reach, so that he could climb the pile and get the fruit.

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Julius was very slow in solving the problem with boxes, but when given a pole, he improvised a perch between the corner bars of the cage, and reached the banana by swinging or leaping from the perch. If I understand Yerkes correctly, Julius also got the banana by pole-vaulting for it. His brightest achievement, not mechanical, was to coax Professor Yerkes to stand under the banana so that the ape could climb the professorial ladder. Julius could not learn to unlock a padlock with a key, perhaps because he belonged to the period of Yerkes' sojourn at Harvard, so that he was not allowed to use a Yale key. Yerkes thinks that, on the whole, the orang-utan is not mechanically gifted, although more intelligent and adaptable in the use of tools than the gibbon. Nevertheless, the orang is apparently profoundly uninterested in engineering.

The chimpanzee, a much more tractable and sociable animal, is the favourite ape for experiments, and the most accomplished and inventive in the field of tool-using. Köhler has pointed out that certain defects in the chimpanzee's perceptions interfere with his mechanical progress. He does not distinguish between a part and the whole if they are spatially connected. If a table is placed in the corner of the room, so that its surface appears to be joined to the walls, the chimpanzee will pass it by in his search for a movable object. He generally fails also to distinguish between a cord which is tied to a basket of food outside of the cage, by which the prize may be drawn within reach, and a cord which merely touches the basket. The odds are even that he will pull the wrong string.

Köhler also finds that the chimpanzees have little idea of statics. They cannot learn to make a stable pile of boxes. A large box will be placed precariously on top of a smaller one, and the animal standing on the summit of the shaky pile may even attempt to pull out one of the bottom boxes to add it to the top. The chimpanzee will attempt to stand a ladder vertically under a suspended object and climb up. If the object is hung close to the wall of the room, the chimpanzee will set the ladder flat against the wall, or edge against the wall. The animal's understanding of statics is impeded, and at the same time compensated by its own organic statics—*i.e.*, those of its labyrinth and cerebellum. For the chimpanzee is a natural equilibrist. When he piles up a wobbly and unbalanced structure of boxes, which will topple over if left to itself, he often succeeds in mounting it and balancing it by his own weight long enough to enable him to grab the banana. Again, he is able to set the ladder flat against the wall and climb up it before it falls or even hold it vertically in the middle of the cage, run up it, seize the prize, and jump.

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In other words, he accomplishes a physiological achievement without a mechanical solution. Nevertheless, these animals do not have an absolute lack of insight into statics: they do not try to suspend a box in thin air, and when they use a pole as a jumping stick from the top of a box, they do not attempt to rest the end *in vacuo*, but on the box—although perhaps on its very edge. Köhler thinks that visual orientation in space, the fixed idea of 'above' and 'below', develops gradually in human children as a result of the habitual upright posture of the head, whereas in a chimpanzee the head is just as likely to be held upside-down, and lack of such firm orientation inhibits the development of statics. The chimpanzee lacks the incentive for the development of statics because of his natural gifts as an equilibrist.¹

The one gorilla investigated by Yerkes, a young female named Congo, in tackling the problems of utilizing poles, boxes, et cetera, showed a high degree of ineptitude. In fact, Yerkes calls her a 'moron in mechanics', but notes that this kind of moron may be capable, nevertheless, of various kinds of imaginative adaptation.² I gather that he is of the opinion that such mechanical morons may be accidents which happen even in the best of families—the Hominidae—and especially in the females.

The question of handedness, footedness, and eyedness in the anthropoid apes has been insufficiently investigated. The preference for the use of one foot, one eye, and one hand, and the involved specialization of the controlling side of the brain is of enormous importance in man's mechanical achievement. But even in human beings the implications of bilateral asymmetry and specialization are little understood. Only comparatively recently, educational psychology has discovered the serious extent to which children who are not right-eyed and right-handed, nor yet left-eyed and left-handed, but unspecialized, are handicapped in most human learning processes. Yerkes thinks that preferential use of the members of one side occurs frequently in the anthropoid apes, but does not commit himself to positive statements as to handedness and eyedness in the different apes. But it is fairly clear that an animal has to decide which hand to use before he can accomplish any mechanical feat with either.

Certainly the lack of speech is an insurmountable obstacle to the transmission of culture in the ape. When each individual has to discover

¹ *The Mentality of Apes*, by Köhler, pp. 139-172, N.Y., 1925.

² *The Great Apes*, by Robert M. Yerkes and Ada W. Yerkes, p. 513, New Haven, 1929.

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for himself, or to learn only by exemplification, there can be little or no diffusion of the inventions of the mechanical mind to the ungifted who are capable only of utilization. In the last analysis, however, there is but one fundamental reason for man's exclusive possession of a material culture, for his unique understanding and application of the laws of mechanics. Man has a more highly evolved central nervous system than any other animal. The primitive insectivore with an infinitesimally better brain than its kind takes to tree life. The tarsier, with a slightly superior nervous endowment, sits up and begins to emancipate its hands. The more elaborate cerebral cortex of the monkey expends its excess of nervous or electrical energy in an aimless curiosity. This becomes more purposeful in the bigger brained anthropoid apes and not only adapts the organism but invests it with the quality probably shared only with man—insight. The brain begins to get the upper hand of the body. Even in the earliest of fossil men, this cerebral dominance has so far subordinated gross physical equipment of powerful jaws, big teeth, and strong grasping extremities, that these no longer require modification to enable the animal to survive. The earliest human forms we know were tool-users. When man becomes an engineer he begins to adapt his environment to himself, rather than himself to his environment. Tools make organic adaptation obsolete.

STEPS IN MAN'S MECHANICAL PROGRESS

I have been dealing with the physical and psychological background of man's mechanical preeminence. But progress in any science presupposes a society in which competition stimulates the inventive brain, while mutual aid and imitation amplify and improve its achievements. Let us examine the social basis of man's engineering progress. Perpetuation of the species is secured by success in the food quest, by evasion of, or defence against, enemies, and by reproduction with the safeguarding of offspring. At the root- and fruit-collecting and hunting stage of man's existence there is a certain incompatibility between the food quest and social aggregation. To live upon natural products it is desirable that human groupings be small and widely scattered. For purposes of mutual defence it is, on the other hand, essential that bands of numerous families be formed, if we assume, as I think we must, that the earliest forms of men had already sacrificed muscular strength and organic defensive ability to high development of the nervous system. The great anthropoid apes are powerful enough to fend for themselves in scattered family groups, and at worst they can take to the trees. Man,

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in becoming a terrestrial biped, incurred great risks because of his slow locomotion and his puny strength. It seems probable that the necessity which first mothered invention was that of devising weapons to eke out the inadequate strength of the lone food-collector. As soon as the contrivance of weapons of wood and stone had supplemented man's organic resources so that he could tackle the larger game animals and become a carnivore, large social groups became feasible and advantageous. For really big animals can best be hunted down and killed by groups, rather than by individuals, and even if you can kill an elephant single-handed, you and your family cannot eat it by yourselves before its flesh becomes too 'high' even for savage consumption. The antiquity of human combination into social groups is shown by the hundreds of thousands of stone implements of almost identical types which are found in widely separated parts of the Old World during the glacial epoch. Already manifold types of stone implements existed, adapted for various uses. Imitation and diffusion of mechanical achievements had begun. The use of the lever is prehuman; stone working is at least one million years old; the utilization of fire nearly as ancient, although its first artificial production cannot be dated. The harpoon and the spear are easily thirty thousand years old, as are also the spear thrower and the sewing needle; pottery and the bow may not be more than half of that age.

The domestication of plants and animals, which probably began eight to ten thousands of years ago, furnished the greatest incentive to mechanical progress. Domestication enabled man to get an adequate command of food supply, to settle down, to construct permanent abodes, and to begin the division of labour whereby the craftsman bartered the products of his skill for food. The training of the ox and the horse to perform the tasks previously accomplished by man-power enormously increased the amount of energy available for work production. All of this is elementary and obvious.

ETIOLOGY OF MECHANICAL PROGRESS

I should like to discuss briefly here, however, the respective roles of the individual inventive genius and of the imitative crowd in the furthering of mechanical science in primitive society.

Possibly the outstanding characteristic of primitive or savage societies is their rock-ribbed conservatism. That is perhaps why many of them have remained primitive. Under these circumstances the progressive has hard sledding. People persist in doing things in the old

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stupid ways and in using implements which are ineffective and obsolete, merely because of the ease with which motor habits are formed and the impermeability of the low-grade brain to new ideas. The innovator in the field of mechanical science is regarded with suspicion, fear, and hatred, because his inventions are misunderstood, and because they seem to give him an unfair advantage and to depreciate the time-honoured methods, inferior tools, and lesser ingenuity of the ordinary worker. These observations are valid in primitive societies and probably held true in civilized nations up to the last century. Only within that time have innovations become the rage of industrialization. The primitive inventor had to overcome a far greater inertia of stupidity and conservatism than it is easy for us in our mechanical age to conceive. He had to possess not only the mental ability to formulate mechanical principles and to translate them into working models, but also the moral courage to persist in the contrivance and use of the novelties which made him suspect.

The almost incredible duration, through scores of thousands of years, of identical types of coarsely shaped and inefficient flint implements, probably reflects the struggle of the human organism to accustom itself to extraorganic aids. It suggests even more forcibly the suppression of the gifted innovator by the unprogressive horde. It is almost treasonable to argue in this democratic society that social, material, and intellectual progress has never been a communal achievement—a sort of immaculate conception of the group mind—but always the result of the effort of the gifted individual. The genius, mechanical or of any other sort, seems to be due to a fortuitous combination of superior mental qualities which from time to time is dealt from the shuffled pack of hereditary units. Civilization has advanced, in my opinion, not because of any improvement of mental quality in the masses within the last ten thousand years, but rather because the realization of the material advantages to be gained from the toleration of genius has slowly percolated into the torpid minds of the majority of our species. This very reluctance to adopt a new and better idea or device carries with it a tenacity in the retention of such material cultural improvements as have won acceptance. Consequently, little utilitarian mechanical knowledge is lost, and there is a slow, cumulative transmission of the scientific achievements of the past. Thus when the rare genius comes along, he is enabled in successive ages to take off his flight from higher structures which have been painfully built up by his gifted predecessors, consolidated by subsequent utilization, and sanctified by custom.

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EFFECT OF TOOL-USING UPON THE ORGANISM AND UPON SOCIETY

Let us now consider the effects of tool-using in a complex society upon man's organism and his biological future. There can be no doubt that modern mechanical science is partly responsible for the diversion of human evolution into smoothly engineered highways upon which we are coasting recklessly downhill. Let me recapitulate for a moment. Man raised himself above the level of the brute ape by developing a superior brain which enabled him to bolster his physical weakness by the use of extraorganic tools. A succession of achievements along this line very quickly made him monarch of all he surveyed—lord of the fowl and the brute. Unsatisfied with dominance of animate nature, he has proceeded, with some success, to attempt to harness the forces of the universe. Why should any one carp at such a stupendous performance? In the first place, I think that we may assume that any living organism, by its metabolic processes, can convert into vital energy, for growth, for reproduction, or for the performance of work, an amount of food which is rigidly limited by various organic restrictions. By means of hormones, or chemical messengers, the secretions of the ductless glands direct varying amounts of energy to different parts of the organism, according to the insistency of their several demands. The active part receives the nutriment it requires; it enlarges. The idle organ is kept upon starvation diet and shrinks. The ascendant phase of human evolution emphasized cerebral development because the brain was actively functioning in order that the species might survive by mechanical progress. At the same time, this brain trust was robbing the rest of the body, but to some extent of ill-gotten gains accumulated during the brutish stages of higher primate development, when the giant anthropoid apes (including our ancestors) got the bulge upon the monkeys, simply by becoming gigantic, formidable, and fearless. The increasing use of the brain both directly diverted nutriment from other parts of the body, and indirectly, through creation of tools, diminished the work which had to be done by the hands, arms, legs, and teeth. These less active organs decreased in size, and atrophy brought also impairment of quality and not infrequent pathology. Up to a point, the recession in muscular strength and in masticatory and digestive ability was perfectly all right. No man has need of the strength of the ape (unless he is a professional wrestler or that supreme product of higher education—a football player). But he *ought* to need the brains of a man; he should not be able to survive and to flourish with the mental equipment of a moron.

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At first, mechanical science merely devised tools which would utilize more efficiently the supply of human energy convertible into work. Use of these tools required muscular exertion, manual skill and coordination, and a considerable mental effort. Thus a sort of organic equilibrium in evolution was maintained; the brain was not overfed; the body was not markedly atrophied. The mischief began when mechanical genius began to contrive tools which facilitated the performance of work with little or no cerebral exertion. In the conversion of raw products, the individual was allowed not only to stop sweating, but also to stop thinking. While he did work with tools requiring a minimum expenditure of physical energy, his brain went on a vacation.

The industrial age involves an elaborate social structure with a minute division of labor. The object of this organization is the mass production of material culture with the supposed purpose of furnishing cheaply to most of mankind things which will make life easier and happier. The ideal of popular distribution of invented products has, to a great extent, been realized. It is unnecessary to regurgitate here the well-masticated question of the social and biological effect upon human organisms of their being transformed into units for this mechanized production. The working days of these human cogs are spent in performing with precision and rapidity a short series of skilled movements which become more or less automatic, but still require attention. The effect of such a life upon the nervous system, upon the mind, and even upon the muscular and other functions of the body is devastating. Such an infinitesimal human unit in a production machine can scarcely realize from his labors that sense of creation and pride of craftsmanship which are the incentives that make the engineer.

The anthropological effect of mechanization upon the users of these super-tools is mainly maleficent. Primitive conditions require the individual to be physically and to some extent mentally active throughout his short span of life, if he is to survive and perpetuate his kind. Demands upon his organism are symmetrical, though rigorous. Natural selection and social selection eliminate the physically inferior, the manually inept, and to some extent the mentally dull, because each man creates his own tools and survives through his ability to use them. Intelligence advances in step with mechanical ability and bodily fitness. However, when human ingenuity contrives machines which increase almost infinitely the individuals' control over matter, the struggle for survival and the checks against population increase are largely nullified. The physically and mentally inferior multiply with astounding rapidity,

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partly because their feeble capacities for productive work are, nevertheless, sufficient to make them cheap, but essential, adjuncts to the machines which play the larger part in goods production. Mechanical conversion of natural resources into food and other human essentials permits the survival of the low-grade biological specimen on a level of adequate nutrition and comparative idleness which would have been unimaginable for the primitive being, even if he were at once a mental genius and a Hercules. A majority of the population exists parasitically upon the inventive genius of the few, with little exercise of its meagre intelligence. The mechanical contrivances which eliminate the necessity of thought, judgment, and skill in the user are almost equally available for the use of the moron and the criminal as for the intelligent and the socially minded. The vast potentialities of these tools are used more and more for evil, as they become perfected, cheaper, and more easily accessible. Machines get better and better, while man gets worse and worse. The extra-organic tools are no longer accessories; the tail now wags the dog and even thinks for him. It remains for the other end only to bark and bite.

The once erectly striding biped abandons human locomotion and whizzes through the landscape, crouched over wheels and levers worked by his still prehensile hands, and his flat, vestigial feet less useful for this purpose than those of his simian ancestors. He breathes a mixture of gasoline fumes and carbon monoxide and reeks of evolutionary decay. A premium is put upon illiteracy by the radio and the talking moving picture. These mechanical marvels are the means of world-wide spread of vulgarity, depravity, and misinformation, since they pander to the tastes of those who are capable neither of contriving nor understanding but only of crude sensory perception, stimulated by turning a switch or pressing a button—motor performances within the capacity of a lemur. Truly, man can say to the engineer, 'The zeal of thine house hath eaten me up'.

Now I have purposely painted a somewhat lurid picture, which may be thought a caricature, and is not likely to win admiration or to give pleasure. As a matter of fact I wish to do neither. When nearly all of mankind insists upon regarding themselves as godlike creatures, he who harps upon the apish basis of the human organism and the possible reversion to an apelike behaviour, cannot hope for popular acclaim. I do not wish to depreciate the virtually superhuman achievements of pure and applied science; in fact I aspire to be regarded as a humble sort of scientist myself—possibly an impure practitioner of an

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unapplied science. It is my purpose, rather, to emphasize the possibility that man's mechanical science (the product of the few) has so far outstripped his biological status and his social ideals and behaviour that it has become a menace. What are we to do about it—call a moratorium upon mechanical endeavour and progress until man catches up with his machines? I think not.

What we must do is to divert a modicum of that high intelligence and creative ability which is too nearly monopolized by mechanical science to the study of ways and means of repairing and improving the human machine. We must remember that we are still animal organisms, and that the higher animal elevates himself only by striving to exercise to the full his organic functions. Degeneration and evolutionary extinction are the fate of the living thing which becomes so dependent upon a specialized environment that it loses the power of adaptation, of initiative, and of progress—literal and figurative. It is no more profitable for man to become a slave to the mechanical contrivances of his own mind (or of others' minds) than to become a parasite upon anything else in nature.

Man made himself out of an ape, partly by becoming an engineer. The danger now is that the process will be reversed and the engineers will make apes of all of us. We apes shall then destroy ourselves and hoist the engineer with his own petard. My firm conviction is that we must build the future of humanity, if there is to be any future, not upon mechanical science which is up to this point the greatest human achievement, but upon man's biology about which we know virtually nothing at all. If man can make machines which are better than himself, cannot he make himself better? We do not need more automobiles, we need fewer fools in the driving seats; we do not want mechanical robots, we want human animals who still have brains; not more jails, but fewer criminals; not perfected weapons of war, but peace. The gorilla can manipulate human tools, but he uses them destructively. There is but one way of making a man, and that is the biological way. There can be no stability of civilization, when the human biped totters, and he cannot be propped effectively by law, by education, by religion, or even by mechanical inventions. Breed better animals by selection and elimination of the inferior; study the transmission of those organic capabilities stored up by our species through the millions of years of primate evolution which have culminated in man. You will then conclude that it is man who makes the tools, and that only men, not morons or apes, may use them for the betterment of humanity.

Mr Myres on Verulamium

by R. E. M. WHEELER

IN the last part of *ANTIQUITY* (March 1938), Mr Nowell Myres has said certain things—many of them excessively handsome things—about the excavation of Verulamium, and in particular about the Report which was written three or four years ago and was published by the Society of Antiquaries two years ago. In his commentary there is much that he and I may allow to rest in our mutual understanding. But there is much else that claims no such sanctuary; and since he himself pleads guilty to the 'somewhat ungracious procedure' of having 'deliberately taken up not so much the positive achievements of the authors' work at Verulamium as what may be termed its negative results,' I am tempted for a few pages to share his guilt and his 'ungraciousness'—to deal, in short, with one or two matters which have escaped Mr Myres and must therefore have escaped other critics.

Mr Myres's main contention, that the work of excavation at Verulamium was left unfinished in 1934, is as true as it is obvious. By an astonishing coincidence—for neither Mr Myres nor I knew that the other was writing—a complete answer to this complaint was contributed by me to the *Antiquaries Journal* for April 1938. My own article was in page-proof before Mr Myres's appeared and, save for the addition of a postscript, has not been altered. In that article I briefly set forth a number of facts which, though they have been familiar to a widening circle of archaeologists since the end of 1930, had seemingly failed to penetrate the enviable seclusion of Tom Quad. Without again recounting all these facts, I may recall that, from the end of 1930 until the middle of 1937, the greater part of Belgic Verulamium (including a portion of Prae Wood) and the projecting part of the Early Roman city (the 'Fosse') were threatened by an impending 100-ft. arterial road, the exact line of which defied agreement between the various interests and authorities and could not yet therefore be anticipated by excavation. Conference succeeded conference throughout those years. First Commissioner after First Commissioner was initiated into the scheme by the Ancient Monuments Department; one First Commissioner

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actually surveyed the battle-field in person. Hospitality and argument were lavished upon those whose word might count a little one way or another. Indeed, on a review of that exciting epoch I am driven to the conclusion that Mr Myres is the only person in Great Britain who was not rendered sleepless through intrigue and indigestion. But by now at least he fully understands the inwardness of our attitude towards those two vital parts of the Verulamium complex. So far from avoiding and evading them, we lived in daily contemplation of a £5,000 'dig' that should encompass both.

The environment of Mr Myres's criticism thus fades into nothingness, and Mr Myres himself would gallantly be the first to admit it. His further complaint that in the Report there is 'no discussion of prospects for the future', is, however, cogent enough. In future my excavation-reports shall comprise two parts: Part I, what we did; Part II, what we didn't. I speak seriously since, on looking again at the Verulamium Report, it is now clear to me that my cursory reference on p. 39 to the impending arterial road was insufficiently explicit to allay Mr Myres's potential fears. Mr Myres scores.

But Mr Myres does not always score. Indeed, I have a comfortable fear that in several matters he is less than right. Take, for example, his reference to Belgic Verulamium:

'Are we really to believe that this unimpressive group of earthworks in Prae Wood with its shadowy continuation to the south, with not a single identifiable hut-site and no intelligible western boundary was by itself the centre of Tasciovanus' power. . . ? Of two things at least we may be certain: his palace was not there and his mint was not there; had they been, we can be sure that Dr Wheeler would have found them'.

Mr Myres, by way of contrast with this nebulosity, proceeds to cite Belgic Colchester as a 'good example' of a Belgic city.

'This appears to have consisted, as the recent excavations and surface field-work have shown, of a large central nucleus of solidly massed huts, pits, and ditches originally protected by a great dyke which was totally obliterated soon after the Roman Conquest. This nucleus was surrounded by a wide area of country itself demarcated and enclosed by several more extensive lines of travelling earthworks, and probably containing a number of less important and satellite *kraals*. Now while it is true that at Colchester, as at Verulamium, excavation has not yet struck either the king's palace or his mint, the Colchester complex has at least a recognizable and thickly populated centre, in some part of which they presumably lie. But Belgic Verulam, as revealed by Dr Wheeler, has no such centre, for by no stretch of imagination can the Prae Wood ditches be equated with the dense occupation on the Sheepen Farm site at Colchester'.

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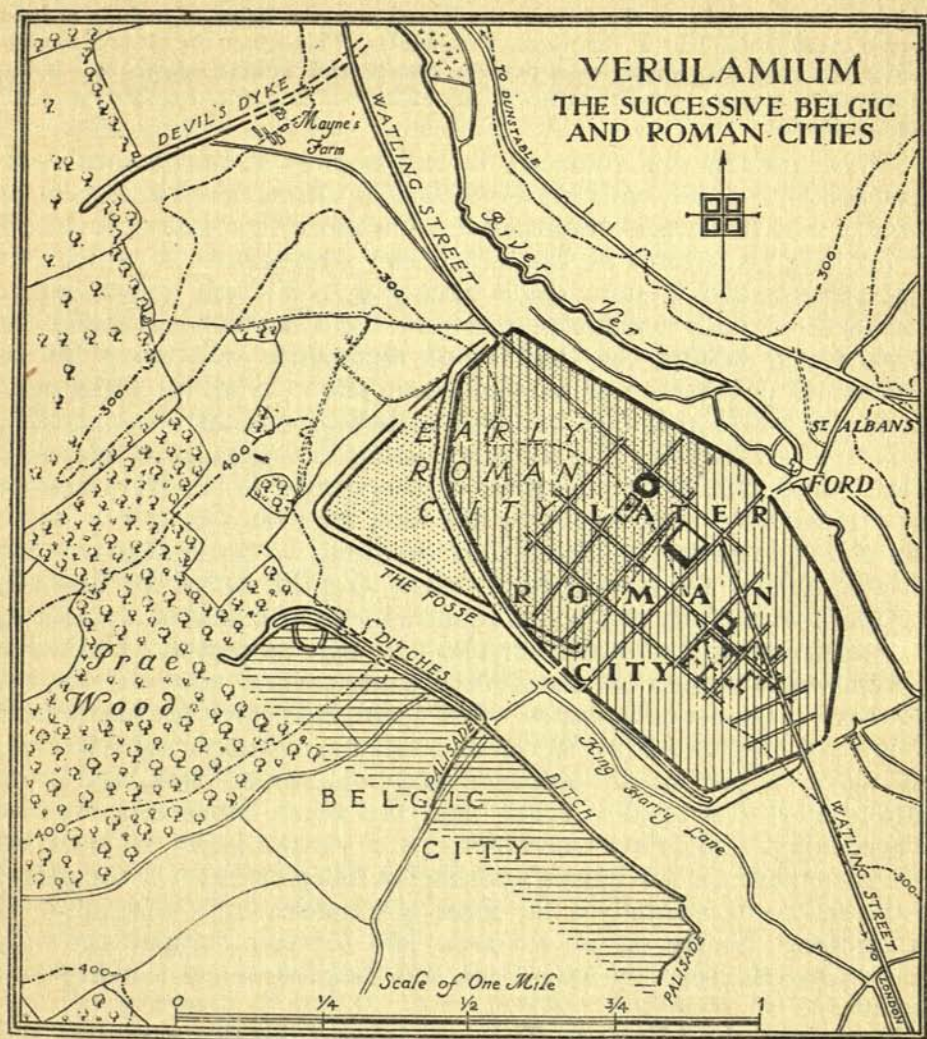
This comparison or, rather, contrast, can only be described as naïve. It will suffice to say at once and quite bluntly that Mr Myres's summary of the Prae Wood earthworks and their contents is a mis-statement of the essential facts. These facts are, I claim, sufficiently evident in the Report; in the *Antiquaries Journal* paper (which, of course, Mr Myres had not seen when he wrote), I summarized them as follows :

' A long series of extensive cuttings proved that the Prae Wood earthworks are of two dates, both within the half-century preceding the Roman invasion. A further series of cuttings (about fifty, all told) revealed, by trial and error, that the main Prae Wood ditch had continued southwards for over 1,000 yards through fields which now show no superficial indication of it. The plan had been bisected and terminated by palisades at right-angles with the line of the earthwork, the terminal palisade being sinuous as though to conform with the irregular margin of the woodland-clearing. Earthwork and palisades together imply a large enclosure or enclosures (just as three walls at right-angles to one another imply a room), and the whole system was doubtless completed towards the south-west by intact woodland, the main artificial defence being on the (geologically) more open hillside towards the north-east. The result would be a large enclosure of similar length and, likely enough, of approximately similar width to the second century Roman city; *i.e.*, an enclosure from 150 to 200 acres in extent.

' Within this large Belgic enclosure, it need not be supposed that the whole surface was covered with habitations, as were the smaller areas of some at least of our south-western *oppida*. Caesar, on the contrary, describing just such sites as Belgic Verulamium, remarks that they were refuges alike for men and for cattle. Excavation in 1931-3 suggested that our site had in fact fulfilled this dual role. An area of 4,000 square yards was systematically cleared behind the Prae Wood defences and was found to be seamed with drainage-ditches literally filled with occupation-debris. During the height of this work it was not uncommon for one or even two oat-sacks full of Belgic pottery to be brought away daily. Beside certain of the ditches were remains of cooking-ovens; but, for the rest, the loose sandy soil hereabouts had been completely riddled with tree- and shrub-roots and, above all, by the dense crop of bracken which makes the wood a veritable jungle in summertime. Nothing is more destructive than bracken-roots of vestiges such as post-holes; and even on an open Belgic site such as that excavated with the utmost skill by Mr Hawkes and his colleagues at Colchester, the structural remains of hutments were, I understand, almost irrecoverable. Certain it is that the Prae Wood site, cleared slowly and with infinite care and patience by Mr Dermot Casey, had held Belgic huts but retained no definitely recognizable vestiges of their timbering. A smaller area cleared in 1932 by Mr Huntly Gordon near Prae Wood Farm showed similar evidence of ill-defined but abundant occupation. On the other hand further south in Pond Field, nearer the centre of the complex, a restricted area, cleared by Mr Casey, yielded but slight evidences of occupation and may have been entirely devoid of hutments.

' This patchiness is exactly what we are learning to expect on a Belgic site. A typical Belgic *oppidum* may turn out to have consisted in the main of a congeries of

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Based on the Ordnance Survey 6-inch map, Herts., xxiv, by permission of the Controller of H.M. Stationery Office, and reproduced by permission of the Society of Antiquaries of London

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separate hut-clusters, united within a more or less defined territory but lacking the coherence of a Wessex *oppidum*. In the latter, the fields and herds were wholly or largely extra-mural; in the former, the fenced area was liable to include at least some considerable part of the nearer farm-lands. This is not the context to consider the interesting divergences between eastern and western *oppida*, nor is the time yet fully ripe; but the matter is one which will in due course deserve a full discussion.'

I have quoted this summary in full because it happens to deal, almost point for point, with Mr Myres's difficulties. And one point in particular may be further emphasized. On more than one occasion, I was the happy spectator of the Colchester excavations to which Mr Myres refers; and I state quite plainly that, if from the Sheepen site be deducted all remains posterior to the Claudian conquest, the area excavated behind the Prae Wood earthworks was every bit as productive of pottery as was the Colchester site. True, the Colchester finds are far richer in foreign material, as befits a coastal site controlled by a far-sighted tyrant. But the nett evidence for population is closely similar. And surely even the most cursory reader of the Verulamium Report must have been struck by the fact, for example, that a single group of Belgic pottery in Prae Wood produced no fewer than seventy illustrated types. On turning to my plans, (*e.g.* Pl. xvi of the Report), I find that I wrongfully omitted to indicate the exact extent of clearances, but I affirm here and now that anyone who may be permitted to make further depredations in the Prae Wood game-coverts may increase his Belgic reserve almost *ad infinitum*. And again, in fairness Mr Myres may be reminded that the Prae Wood excavations, although considerable, formed only a part of an immense and widespread task, and were naturally more restricted in scope than the much more concentrated and specialized Colchester excavations; and yet the latter, no less than the former, have on Mr Myres's admission failed to discover the palace and the mint—incidentally a far more productive mint than that of Verulamium. Surely on all grounds Mr Myres's comparison with Colchester could scarcely have been less helpful to his self-imposed difficulty.

Now as to the 'Fosse.' This was proved, by five complete and many partial sections producing a large mass of evidence which was examined sherd for sherd by those best qualified to pass judgment, to date from the third quarter of the first century A.D. The large squarish area which it enclosed was accordingly identified, incontrovertibly, as the main area of the early Roman city. (Mr Myres, without discussion, uses the phrase 'optimistically labelled "early Roman city"', but Mr

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Myres is there being merely naughty, and the phrase may be passed over). Mr Myres now knows why this early city has not been more extensively explored. But he is wrong when he states that 'not even a trial trench has been dug' in it. The south-eastern side of the 'Fosse' enclosure could not be fully determined, but on any showing the large temple-precinct south-west of the theatre was well within it. Now the numerous and extensive trenches cut to the natural surface in the course of the exploration of the precinct in 1934 revealed Claudian pottery and coins but no pre-Claudian deposit. They are referred to in the Report, p. 132, but Mr Myres has overlooked their significance. So far as it goes (and it goes some way) this may slightly modify Mr Myres's predilection for the area of the Fosse enclosure as an alternative Belgic city. It can scarcely be doubted indeed that the Belgic city spilled over its formal boundaries and that there were huts or even hut-clusters here and there upon the "Fosse" hillside; similarly I can show Mr Myres the remains of Roman buildings some hundreds of yards beyond the formal boundaries of Roman Verulamium. But when he remarks 'Is Prae Wood, perhaps, only an outlying element of a once larger whole?' and looks for 'other and more central elements' on the hillside within the Fosse, he is forgetful of the fact that the Belgic earthwork-system of Prae Wood, etc., *faces outwards towards this hillside* and would therefore *exclude* any settlement there situated. In his effort to turn Belgic Verulamium upside-down, it is to be feared that Mr Myres has merely turned it inside out.

Two further points, and this private interchange between Mr Myres and myself shall cease. Commenting upon the later Roman defences, Mr Myres remarks: 'Dr Wheeler makes an overwhelming case for placing the construction of the defences in the second century; it must however be said that the Hadrianic date which he presses seems hardly warranted by the evidence which he gives. . . . A very close parallel might be quoted from the Aldborough excavations of 1935. There too a Hadrianic date for the walls at first seemed certain . . . but the presence of two or three possibly Antonine sherds . . . has convinced the excavators that the defences of [Aldborough] cannot be safely dated before the reign of Pius'. Let us dispose of the latter part of this statement first. Mr Myres has recently given to the Society of Antiquaries a full and exceedingly frank account of the Aldborough excavations, and has admitted that, after no less than three seasons' work—in the course of which not a single complete and definitive section was cut through the defences and not a single gateway was tackled—the

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original date of their construction is still uncertain within a margin of at least half a century. Mr Myres will be well advised to say very little about Aldborough until one or more further seasons' excavations there has straightened out this fragmentary and inconclusive piece of work. At Verulamium, three large gateways and two wall-towers were completely excavated, three large sections were cut completely through the defences, and the whole of the southern corner with its complex ditch-system was laid bare. The work was supervised in detail and independently by Miss Kenyon, Mr P. K. Baillie Reynolds and Mr Dermot Casey. The datable evidence recovered was immense in quantity, every sherd was carefully examined by all of us, every fragment of Samian was seen by Dr Davies Pryce, and specially significant pieces were referred also to Dr Felix Oswald. The result was absolute unanimity of diagnosis within a margin of ten years, which is as near as second-century pottery will take us. In summarizing the discussion I observed that 'the great mass of pottery sealed by the defences consists of types not likely to be later than c. A.D. 120, whilst the latest datable sherds—only two or three in number—need not be later than c. A.D. 130, and are in any case unlikely to be later than c. A.D. 140-50. The extreme scarcity of these relatively late sherds (which, be it interpolated, are fully recorded in the Report) supports an early dating for them within the margin of possibility' (Report, p. 75). And then—although Mr Myres omits to recall the latitude of its judgment—the Report concludes: 'On all grounds, positive and negative, the evidence abundantly confirms a date not later than the second quarter of the second century A.D. for the re-fortification of Verulamium, with a strong indication that the work occurred rather in the reign of Hadrian than in that of Pius'—but, be it observed, not excluding more than half of the reign of Pius as a possibility! Mr Myres's treatment of the whole matter is, shall we say, a little out of focus.

Finally, there is the question of the publication of Roman pottery-types. Two points arise: what *should* be done, and what *has* been done. As to the former my view, and the view of others, is this: that in dealing with a vast and complex site such as Verulamium, fraught with historical implications of the first magnitude, the main report should confine itself mostly to the statement and illustration of such evidence as is of primary historical significance—evidence bearing, notably, upon the dating of structures and so indicating the material vicissitudes of the site. The converse process—the assessment of the bearing of those vicissitudes upon the grouping and classification of

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ceramic (and other) evidence in detail—is a secondary work, necessary in itself but less urgent and vital. And as to the second point—what in fact has been done at Verulamium in the publication of Roman pottery—I will briefly state the facts without comment. Mr Myres grudgingly observes : ‘ It is indeed remarkable that drawings of as many as 84 Roman pots have somehow been squeezed in ’ to the Report ; although ‘ from the later periods, the third and fourth centuries, practically no pottery has yet been illustrated at all ’. Now Mr Myres has a growing reputation as a scholar and it is unnecessary to remind a scholar of the literature of his subject. But, since he omits to do so, I must remind his readers that Miss Kenyon’s paper on the Verulamium theatre, published in *Archaeologia* LXXXIV (1934) to relieve the main Report, illustrates a further 32 Roman pottery-types, mostly of the fourth century ; and that 212 sectional drawings of pots from the Verulamium cemetery at St. Stephens have been published in the *Transactions of the St. Albans and Hertfordshire Architectural and Archaeological Society*, 1935, by Dr Norman Davey, who worked in close liaison with the Verulamium Committee. Attention is drawn to his work in the Report, p. 135. With a total of 328 published drawings to its credit, I affirm that the Roman pottery of Verulamium has been given a flying start.

The last word in this rejoinder, however, shall rest with a more discerning judge than either Mr Myres or myself. I am reminded opportunely that that great man, Mr Bertram Wooster, has laid down for all time the fundamental principle of attack, and I would commend it to Mr Myres’s earnest thought : ‘ The first thing you need in matters of this kind, as every general knows, is a thorough knowledge of the terrain. Not know the terrain and where are you ? Look at Napoleon and that sunken road at Waterloo. . . . ’ Mr Wooster then adds two characteristic words which I omit in the present context.

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AIR-PHOTOGRAPHY

Early in this year Mr Crawford received an official invitation from Germany to organize an exhibition of archaeological air-photographs in Berlin and to deliver a lecture on them there in March. The consent of the Director-General of the Ordnance Survey Office was given, and a typical set of about 40 enlarged air-photographs (together with about 100 smaller ones) was lent for the purpose. In addition, Major Allen kindly allowed a selection to be made from his own remarkable collection, which so brilliantly illustrates the archaeological value of air-photography. The purpose of the exhibition was to inaugurate an intensive campaign of similar work on German soil; and with this object invitations were sent out by the Lilienthal Gesellschaft, by whom all the arrangements were made in Berlin, to officers of the German Air Force on the one hand and to the leading archaeologists of Germany on the other. The proceedings took place in what was the Upper House of the former Prussian Parliament, and consisted of the discussion of technical problems, which were illustrated from the photographs exhibited. Amongst them were those already obtained by German pilots, who have shown a keen interest in this branch of research, and have now begun to collaborate successfully with the archaeologists. Amongst the German air-photographs exhibited were some of a fortified medieval site (Pfalz Werla), whose outer defences were thus revealed and subsequently excavated. In addition, Mr Crawford detected, on some of the other photographs, traces of an earlier (probably medieval) field-system similar to that which had been observed by him from the air between Cologne and Brussels. The discussions occupied two days, and concluded with a lecture by Mr Crawford at which several hundred people were present. The lecture was preceded by an address in which Dr Buttler explained, for the benefit of those present who were not experts, some of the principal archaeological terms and periods, and was followed by a short summary, by Ministerialrat Ewald, of the results obtained in Germany.

It was generally agreed that the objects of the meeting had been obtained, and that a very profitable and pleasant two days had been

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spent. The proceedings are to be published by Lufthansa in the form of an illustrated monograph, which will be widely distributed amongst all concerned ; and it is confidently expected that good scientific results will soon be obtained. The whole affair was organized with the keenness, thoroughness and efficiency which one accepts as a matter of course in Germany. The writer takes this opportunity of once more expressing his thanks to all those concerned for their kindness and hospitality, particularly to the officers of the Lilienthal Gesellschaft and Lufthansa.

After the meeting the writer took the opportunity of flying by Lufthansa to Athens, on business connected with the Greek portion of the Map of the Roman Empire. Between Budapest and Belgrade, nearer to the latter place, he observed many soil-marks, consisting of long narrow white bands forming a connected pattern. Probably these are the vestiges of an ancient field-system. Whatever their age and original intent many of the marks seem to have no relation to the existing field-system, which itself has the appearance of considerable antiquity. It would be easy to decide this point if a large area were photographed from the air under suitable conditions (*i.e.*, during a dry spell in the spring), and a mosaic constructed. Subsequent excavation at selected points would decide the matter. In addition the writer noticed the outlines of three Roman camps plainly visible in arable land ; and the courses of several of the defensive dykes, some of post-Roman date, were observed. The existence of these dykes, of several miles in length, has of course long been known ; but they have not yet been properly fully investigated. Here is one of the best fields in Europe for combined field-work on the ground and from the air. It is to be hoped that our archaeological colleagues in Yugoslavia will follow the example of Germany and inaugurate work in this unexplored, and most promising, field. Should they decide to do so, they can certainly count upon the cordial cooperation of workers in other lands, who would gladly give them the benefit of their experience.

O.G.S.C.

EARLY MAPS AND TIDE-TABLES

There appeared in *ANTIQUITY* for December 1937, xi, 486-9, a brief description of a little volume of maps and tables, block printed on twelve parchment leaves, and catalogued in the Bodleian Library as Ashmole 1352. There seems every likelihood that this is a copy of a book which the present writer has long been anxious to find, and which

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is thus described in a letter* from John Bagford to Thomas Hearne, written in February 1715 :

‘ The first step that was made towards the knowledge of the Coasts of England was by an Almanack, with a Chart of the Coasting Part of England, in a small portable Volume bound and printed on Velum, or rather Parchment, by Winken de Word, An. 1520. This is the first I have seen of that kind, altho’ before as well as since such Coasting-Charts were made by hand for the Benefit of Pilots ’.

As Bagford says, manuscript examples are not uncommon (there is one in the National Maritime Museum at Greenwich) and the manuals are obviously of French provenance. They are in fact books of tide-tables, giving very necessary information to ship-masters engaged in the Gascony wine trade. The sphere of this trade is indicated by the area mapped. It extended northeastwards to Zeeland in the Low Countries; northwards to St. Andrews and Loch Ryan on the respective east and west coasts of Scotland; northwestwards to Orfleet (Old Fleet Harbour, *i.e.*, Larne) and Sligo Bay on the opposite shores of Ireland; while southwestwards it embraced the north, that is to say the non-wine producing, coast of Spain as far as Cape Finisterre in Galicia. As one of the maps reproduced indicates, the original of the printed example was compiled while the English flag still flew over Bordeaux, and this tallies with the deduction to be made from the table of movable feasts described by Mr Philip, namely that the date of compilation was 1450. Aquitaine was lost to the English crown in 1453.

In the manuscript room at the British Museum there is an English copy of just such a French manual made by a seafaring man, one William Marshall, for the library of the Earl of Arundel, about the middle of the sixteenth century. This has been briefly described by the present writer in the course of an article on an Italian Navigating Manual which will be found in the *Geographical Journal*, LXXVIII, 346. Before comparing this with Mr Philip’s example, the method of using the maps and tables must be made clear. The compass diagram (or ‘ rose ’) to be found on each section of the maps (described by Mr Philip as ‘ pointing in the wrong direction ’) is meant to be used as a twenty-four hour clock, and hence its orientation is immaterial. The north-point (or ‘ lily ’) represented midnight, the south point noon, 9 p.m. was NW, and so on, all round the circle. An examination of the charts will show that a series of lines (ornamented with scroll work of no significance) run from particular compass points to particular ports and estuaries. These give the times of high water in the respective harbours

* *Leland’s Collectanea*, ed. T. Hearne, 1715, vol. 1, p. LXXIX.

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when there is a new moon. Referring for example to the map of England on PLATE XIV (ANTIQUITY, facing p. 489) we find that a line runs from the south point on the compass to the Thames estuary. This indicates that with the new moon, high tide occurs there at noon. Full tide at the Isle of Wight and on the Norfolk coast is 'at S.E.', i.e., 9 a.m.; in the Bristol Channel and on the stretch of coast between the Lizard and Portland it is at 6 p.m. (W). In the Irish Sea the time of high tide is to be read from the compass-rose on the opposite page. It is at 'SSE.', i.e., 10.30 a.m. Reference to a modern map of co-tidal lines will show that all these times are approximately correct. The maps, as we have seen, only give the time of high tide when the moon is new. Further tables are necessary, owing to the daily retardation of the time of high-water consequent on the motion of the moon. These are given in the form of the 'nine circular tables' (there are usually eight) to which Mr Philip refers. Two of them are reproduced in the article by the present writer cited above. The method of using them was as follows. In the first place the seaman referred to his current Almanack to find the 'age of the moon' (the number of days since new moon) on that date. He then turned to the appropriate circular table for the port he proposed to enter. If, for example, he was going into the Thames, he would turn to the diagram marked 'South': if he was going to Bristol, to the diagram marked 'West', and so on. Round the outer circle he sought for the figure corresponding to the age of the moon, and beneath it he found the times of high and low water to the nearest quarter of an hour. The table also showed him the days of spring and neap tides within the lunar month. The fact that sailors divided the hour into quarters and not into minutes involved the use of a daily retardation of three-quarters of an hour, instead of the more correct figure of 48' used by astronomers. How this discrepancy was adjusted is discussed by A. E. Stephens in an article entitled 'The Booke of the Sea Carte' in *Imago Mundi*, vol. II, 55. It will be readily appreciated that as the tides were of little importance in the Mediterranean the matter was accorded but slight treatment in Sea Manuals of Mediterranean or Portuguese provenance. To the Bordeaux pilot trading along the Atlantic margin, such knowledge was vital, so that the French authorship of the tide-tables is easily explained. Since the names on the charts indicate the ports commonly visited by the wine-boats in the fifteenth century their elucidation is of value to the historical geographer. A list is subjoined of the names appearing in Marshall's transcript, so far as they refer to the British Isles. Where he omits

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names found on the Bodleian example these are added in square brackets, and this is also done where an emendation of Mr Philip's reading is suggested.

LOC DERIEN (Loch Ryan)
 LOCH DERIEN (Loch Ryan)
 MURDEGALOE (Mull of Galloway)
 HUSERNE (Whithorn)
 QUICOUBE (Kirkcudbright)
 PILSENTE (Piel Sand)
 LERPOLE (Liverpool)
 CHESTRE (Chester)
 BEOMAI (Beaumaris)
 HOLIE HED (Holyhead)
 CARNARVON (Carnarvon)
 S. DAVID (S. David's)
 MILFORD (Milfordhaven)
 TUNBY (Tenby)
 BRISTOWE (Bristol)
 LESORDE (Lizard)
 FAWLMOTH (Falmouth)
 FACAM (Fowey)
 PLYMMOTH (Plymouth)
 DARTMOTH (Dartmouth)
 TOCSM (Topsham)
 PORTELAND (Portland)
 [OLFAST] (Handfast Pt.)
 POLE (Poole)
 HAMPTON (Southampton)
 PORTESMOUTHE (Portsmouth)
 S. RICARDE (? Seaford)
 BEOCHEFF (Beachy Head)
 DOVER (Dover)
 LONDON (London)
 ARPORTE (Orford)
 [QUILIQUE (Walberswick)]
 YARMOUTHE (Yarmouth)
 LECU (Lincoln or Lynn)

HULL (Hull)
 [QUEFF (Whitby ?)]
 NEWCESTELL (Newcastle)
 [NERS (?)]
 BARWIC (Berwick)
 DUNBAR [DEMBAR] (Dunbar)
 [PETILIT (Burntisland)]
 S. ANDRE (S. Andrew)
 CLEER (C. Clear)
 VALANTIMOR (Baltimore)
 GLANDOR (Glandore)
 KYNESALL (Kynesale)
 CORK (Cork)
 OCLA (Youghal)
 WATERFORDE (Waterford)
 OACSEFORDE (Wexford)
 ARCLOW (Arklow)
 DOVBYN (Dublin)
 DROWADA (Drogheda)
 DENDAUCLE (Dundalk)
 CARINFORTE (Carlingford)
 ARGLAS (Ardglass)
 STRAFORTE (Strangford)
 COBLATINES (Copeland Is.)
 (Inis=island)
 GRANFORGES (Carrickfergus)
 KRE (Magee Is.)
 ORFLUTE (Oldfleet) (Larne)
 DERMART (? Marlough)
 [SLIA (Sligo)]
 [LARS (?)]
 GALOE (Galway)
 LIMERICK (Limerick)

As will be noticed, Marshall has anglicized many of the French forms, while leaving out others, *e.g.*, Queff, Nerf, or Ners, for which, like the modern investigator, he is unable to recognize any equivalent. The harbours visited naturally changed with the lapse of time, and the fact that their names were written down phonetically by foreign pilots has created a further difficulty of identification. Faulty copying, too, is likely to have taken place, *e.g.*, *Pilsente* for Piel Sand, and Marshall's *Facam* for Fowey.

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The tide-table and tide-map manual (in manuscript) preserved at the National Maritime Museum, and belonging to the same type as the Bodleian and British Museum examples has some additional names. In Scotland it extends further north, Montrose and Aberdeen being marked on the east coast, Loch Fyne and an unidentified 'Sondik' on the west coast. On the Cumberland coast Workington and Ravenglass are added, and I am hence inclined to equate *Pilfont* (i.e., Pilsont) to Piel Sand in front of Walney Island. On the northeast coast of England the names are as follows:—Berwick, Holy Is., Bamborough, Coquet Island, Tynemouth, Hartlepool, Rawcliff (Raquale), Hunmanby, Flamborough, Hull. This suggests that the 'Queff' of the Bodleian example is Rawcliff. I think that Lecu or Lecn following Yarmouth is rather doubtfully Lincoln, as this would have no tide: more possibly it is Lynn. These tide-maps could usefully be collated with the contemporary portulan charts, and no doubt the material is at hand in the MSS of the late Michael Andrews now at the Royal Geographical Society. There are clearly two classes of names—land marks and ports of call: the latter relevant for medieval trade routes. In this connexion see also E. F. Bosanquet: 'The Flye 1569' which throws a side-light on the young sailor's way of mastering his tidal data if unable to read. This article is in the *Trans. of the Bibliographical Society*, 1937.

E. G. R. TAYLOR.

A good many letters have been received about the identifications published in the note on Early Maps (ANTIQUITY, December 1937, 486-9). The following is an attempt to sort out some of the information received, as much of it overlaps.

Several readers have written pointing out that S. Richart must be Chichester, which is associated with St. Richard of Wych (Droitwich) who was canonized in 1263.

Professor Minns adds that Quiliqe must somehow be Dunwich and that Lecu is Lynn, not Lincoln.

Mr Keef suggests that Petilit may be Leith.

Mr Tapley-Soper suggests Topsham for 'Tocsm'.

Mr D. A. Chart, Deputy Keeper of the Public Record Office of Northern Ireland, identifies Granforges with Carrickfergus, and Orflet almost certainly with Alderfleet, one of the old names for what is now called Larn Lough.

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The name Pilfout has elicited many suggestions, from which the following are extracted :—

Lt.-General Sir Matthew Fell writes : ' It seems to me that this must refer to " Pile of Fouldrey " where Martin Smart landed in the spring of 1487—with Flemish and Irish Troops in support of Lambert Simnel, the Pretender to the English Crown. An illustration of the " Pile of Fouldrey " is included among Daniell's colour prints, *Around the coast of the British Isles*, published in 1816. The harbour is now known as " Piel Harbour " at the entrance of the channel leading to Barrow-in-Furness. " Piel Castle " is described in the later editions of West's *Antiquities of Furness* and many local publications '.

Miss Marjorie Cross suggests that []omtail may be an effort at Tantallon. She too thinks, with others who have written, that ' Pilfout ' can only be the ' Pile of Fouldrey ', the ruin now known as Piel Castle.

On the other hand the Rev. W. S. Sykes ventured to suggest that Pilfout is more correctly Pulfout, the port of Millom in the Duddon Estuary. He quotes from *Trans. of the Cumberland & Westmorland Arch. Society*, XXI, 78, that Powesfoot in Millom is named in a list of ports in 1566. ' It is not shown as a place of great importance but as the Duddon estuary is one of the larger openings on the coast it may have attracted notice. The Powesfoot is not on the 6-inch Ordnance map but it was in the bay called Borwick Rails Harbour, formed by the mouth of three small creeks. The creeks are marked on the Ordnance map as Salt Home Pool, Rottington Pool and Crook Pool. The port itself was I think at the harbour, close to which is a wharf now used by the Iron Works. That the word pool has changed to Powe is shown in a place-name a few miles away where Lairwathpool of a charter c. 1180-1210 has now Pow or Po' House at the head of it and Helpowe Bridge at the foot '. [We cannot publish any more notes on this subject.—Ed.]

ESSAY ON EGYPT

In ANTIQUITY for December 1936 notice was printed of a prize to be offered for an essay on some archaeological or ethnographical subject (not mainly linguistic or literary) connected with Prehistoric or Pharaonic Egypt.

The Committee reports that it is very gratified at the response, the following ten essays having been sent in. They came from England, America, France, Egypt, and the Sudan, and are listed in the order in which they were received.

NOTES AND NEWS

1. The Lamps of Ancient Egypt.
2. Some new light on the beginnings of Egyptian Civilization.
3. The Labyrinth of Hawara.
4. Ancient Egyptian Agriculture.
5. The Liver's significance to the Egyptians, Minoans, and Babylonians.
6. The Rock-pictures of Lower Nubia.
7. Beekeeping in Ancient Egypt.
8. Prehistoric steatopygous figures from Egypt and elsewhere.
9. The 'First Intermediate Period' of Egyptian History.
10. An unusual Insignia.

The standard was high, and more than one essay was of outstanding merit. One competitor had not noted the phrase in the advertisement 'not mainly linguistic or literary'. Several excellent papers were unfortunately too limited in scope to compete with the four more important ones. After careful consideration of the subject-matter, outlook displayed, importance of the results obtained, etc., the prize was unanimously awarded to Essay 9, *The 'First Intermediate Period' of Egyptian History*, which proves to be the work of Mr Theodore Burton Brown. It is hoped the author may be able to publish what is clearly a valuable contribution to our knowledge of early movements in the Near East.

K. DE B. CODRINGTON, M. A. MURRAY, G. A. WAINWRIGHT.

SICILIAN BRONZE AXE FROM NEAR HENGISTBURY HEAD (PLATE I, FIG. 1)

The bronze shaft-hole axe shown on PLATE I, FIG. 1, was found in September 1937 by Mr H. C. Audin, of Bournemouth, while beach-fishing at a point $\frac{1}{4}$ of a mile east of the present (1938) east end of the new promenade at Southbourne-on-Sea in Hampshire (6 in. O.S. Hants. 86 SE), and has since been acquired by the British Museum. The axe, which had been knocked sideways somewhat out of shape, was hauled up by Mr Audin on his line, together with some other objects consisting of old rope or tow and a portion of a mechanic's overalls with brass rings attached. The axe had a tuft of boot-lace sea-weed growing on it; this Mr Audin scraped off. The total weight of the haul he estimated at about 9 pounds, and it came up from the sea some 50 yards or so below low water-mark. The exact spot was just south-east of

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the wooden staircase down the cliff 200 yards west of Sandymount and 700 yards ESE. of the Gordon Hotel (Lat. $50^{\circ} 43' 8''$, Long. $1^{\circ} 47' 59''$ W).¹

The whole neighbourhood is prolific in prehistoric remains. About half a mile to the east are some pits, still visible in the cliff section which shows quantities of burnt flint (pot-boilers?). Somewhere not far inland from here were found two bronze palstaves which before the war were in the possession of a dealer named David Chambers, in whose shop at Southbourne they were seen and drawn by Mr Crawford.² Another was in Mr Druitt's collection in 1912. Near the Indian Hut, further inland still, was found the double-looped palstave (of Iberian affinity) now in the possession of Lord Malmesbury³; and the Pokesdown urnfield is not far off.

The spot is only $1\frac{1}{2}$ miles west of the Double Dykes which defend Hengistbury Head, the bulwark of Christchurch Harbour and the mouths of the Stour and Avon, well known as a port of entry and traffic to the hinterland of 'Wessex' throughout prehistoric times. Here converging land-routes from all over Britain met sea-ways down-Channel from the east, from the mouth of the Seine and the peninsula of the Manche, and in the other direction not only coastwise from Cornwall and Ireland but from the southwest, above all from Brittany and the Atlantic route beyond from Iberia and the Mediterranean. The importance of the 'Christchurch entry' in Neolithic and Early Bronze Age times has often been emphasized, and Mr Stuart Piggott's excavation of the Holdenhurst long barrow nearby, and his recent paper to the Prehistoric Society on the Early Bronze Age in Wessex, are simply two of the most recent cases in point; the Middle Bronze Age continues the same story, and with the Late Bronze Age we reach a period notorious for its evidence of incomings from abroad. The central European origin of its dominant new bronze types, the socketed axe and the sword, and likewise that of the 'Urnfield Movement' at

¹ These facts were communicated to Mr Crawford by Mr Audin who kindly pointed out the exact spot to him from the wooden staircase halfway down the cliff. It is due to Mr Audin's interest that this valuable evidence was preserved in the first instance and that it has now found a safe home in the National Museum where it is available to students. (The supplementary facts thus obtained have been incorporated in Mr Hawkes' note).—EDITOR.

² One was said to have been found 'in the pinewoods, West Southbourne, at a depth of 2 feet below the present surface, resting on the top of the gravel, June 6th, 1910'; the other (which was only $4\frac{1}{2}$ " long) was said to have been 'found near the British village, Pokesdown, 1911'.

³ *Proc. Soc. Ant. London*, 1911-12, Ser. 2, XXIV, 43-44.

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least ultimately responsible for its immigrations of Deverel-Rimbury urn-people, tend to make one partly lose sight of the fact that the old Breton-Atlantic sea-route was still in active use. But this way came the Breton square-mouthed socketed axes well known in our southern counties : beyond Brittany those axes are distributed as far as the south of France, and in the double-looped palstave and the 'trunnion celt' the southwest and west of Britain show trade connexions in this period as far afield as Iberia. In the region of Tartessus where the commercial wealth of Iberia found its maximum concentration, the harbour of Huelva has produced the famous bronze hoard in which together with 'carp's-tongue' swords and other well-known types, two socketed spearheads of distinctively British type, one with lunate openings in the wings, occur side by side with fibulae no less distinctive of the latest Bronze Age of Sicily (Ebert, *Reallexikon* v, 395-6, taf. 130). Though there are Siculan and south Italian spearheads with eyelets at the base of the blade which may be related to the 'basal-loop' type of the same British family, it is rather the British end of the implied trade-route which shows signs of influence from the mid-Mediterranean than vice-versa. Our 'maple-leaf' bronze razors of this period have their closest parallels in just the same context in Sicily, and Mr Leeds has marshalled suggestive evidence to show that our contemporary cauldrons and buckets are to be traced this way back to their Mediterranean prototypes. But examples of actual Mediterranean objects imported this way into Late Bronze Age Britain are rare. There is a very Italian-looking spearhead in the British Museum from Thames Ditton, but though a late Italian socketed axe might stray as far as Beesel-on-Echt in Belgium,⁴ this country has nothing of the kind to show, and in particular none of the various Italian brooches of Late Bronze or Early Iron Age date found in this country has ever come to light under test conditions able to dispel the suspicion attaching to them as likely modern collector's pieces. In any case they include no example of the particular type represented at Huelva, though that this was carried further in our direction is shown by its occurrence in two Late Bronze Age hoards in west France, Vénat (Charente) and Notre-Dame-d'Or (Vienne), nos. 94 and 735 in Déchelette's list (*Manuel*, II, app. 1B; cf. pp. 327-330).

The type in question is the elbow-brooch (*fibula a gomito*), an early stage in the development of the serpentine form : good examples are figured by Déchelette (*Manuel*, II, fig. 130) and by Peet (*Stone and Bronze*

⁴ Unpublished : Cinquantenaire Museum, Brussels ; Mr G. C. Dunning has kindly communicated a drawing.

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Ages in Italy and Sicily, fig. 245), and the chronology of the Cassibile cemetery and its like in Sicily, of which it is characteristic, dates it to the last phase of the Siculan II period, which is usually made to end about 800 B.C., or at any rate before the Greek colonization of Syracuse in 734. The Huelva and west French hoards make this a synchronism for the British and French Late Bronze Ages, and even though no such brooch-containing hoards have yet been found in Britain, the whole context is sufficiently clear-cut to validate even an isolated British find of any type which can be shown to belong to it. And this is precisely the case with the Southbourne-Hengistbury axe. These rather heavy shaft-hole axes are typical of just this latter part of the Siculan II period, and are well distributed in Sicily and in south Italy. They are amply represented in the British Museum (*Cat. Bronzes*, nos. 2942 ff.; *Bronze Age Guide*, fig. 158), both with and without a knob behind the shaft-hole and an associated ridge-moulding on either face. As in the type-illustration given by Peet (*op. cit.*, fig. 269), this feature is well shown on the Southbourne example: it is a definitely Sicilian character, though axes made without it are equally typical. The standard case of association between these axes and the elbow-brooches is the hoard found in 1898 at Modica not far from Syracuse, where two fine elbow-brooches appeared together with one large and two smaller shaft-hole axes, socketed axes, local forms of 'trunnion celt', socketed spearheads, two swords of an ultimately Mycenaean-derived type, etc., and the blade of an iron knife (*Bull. Paletn. Ital.* xxvi (1900), 166 ff. and tav. xii). The iron knife is a Siculan III type, as at Finocchito (*ibid.*, xxiii, 196), and points to a date for the hoard near the borderline between II and III about 800-750 B.C. The discovery of such a characteristically Sicilian axe of this period in Britain thus strengthens the evidence here recalled for the use of the Mediterranean-Atlantic trade-route in the Late Bronze Age, and it is fitting that it should have been found on the beach so close to the prehistoric harbour alongside Hengistbury Head. C. F. C. HAWKES.

BANK-BARROWS (PLATE I, FIG. 2)

The long burial-mound recently discovered and excavated by Dr Wheeler at Maiden Castle is of exceptional interest to British field-archaeologists. The leading facts were described by Dr Wheeler in his annual report delivered before the Society of Antiquaries on 24 February last, and in his article in *The Times* (25 February). The total length was 1700 feet, and the mound passed over the top of the

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ditch of the neolithic camp which was already silted up when the burial-mound was constructed. Its sepulchral character was proved by the discovery of primary inhumations. The burial-mound was flanked on either side by a ditch which did not continue round the ends. Its coordinates are Lat. $50^{\circ} 41' 40''$, Long. $2^{\circ} 28' 11''$ w. Plainly it has many points in common with typical earthen long barrows, from which it differs mainly in its very much greater length. It seems desirable to have some word to describe mounds of this kind, and for convenience I have here used the term 'bank-barrow'.

Two other bank-barrows are known in Dorset. One of them is on Long Barrow Hill, a part of Martin's Down, in the parish of Long Bredy (Dorset 39 sw.; Lat. $50^{\circ} 43' 4''$; Long. $2^{\circ} 36' 25''$ w). It is 630 feet long, has parallel side-ditches, and runs along the crest of a low hill exactly like its longer counterpart at Maiden Castle. It is oriented SW.-NE., and has a break or depression running across it NE. of the middle point. A curved bank crosses the hill at its SW. end and another, L-shaped (not marked on the O.S. map) lies at its NE. end. It stands in the middle of a group of eight round barrows, with an additional long one of the ordinary type (*Neolithic Wessex*, no. 139) close by. At the cross-roads immediately to the NW. is another group of five round barrows, while to the north is a standing stone. North of it is the modern Dorchester and Bridport road, which here joins a ridgeway of probable prehistoric origin. There are two more long barrows (*Neolithic Wessex*, nos. 140 and another, accidentally omitted) and four round ones three quarters of a mile SE. of the bank-barrow.

Another, slightly longer, bank-barrow is situated on the down east of Came Wood (Dorset 47 SE.; Lat. $50^{\circ} 39' 59''$; Long. $2^{\circ} 25' 14''$ w). It lies in the western angle of Broadmayne parish, east of a row of round barrows, amongst which is that called Culliford Tree. There is a normal long barrow (*Neol. Wessex*, no. 154) north of Culliford Tree. About a mile to the ssw. is Chalbury camp. The bank-barrow lies parallel to a ridgeway on the south which is the eastern continuation of the one referred to in the last paragraph. Throughout its course the ridgeway is thickly set with rows and clusters of barrows which are still prominent objects on the sky-line. Nowhere else in England, except perhaps round Stonehenge, is there such a concentration of burial-mounds.

By a lucky chance I hit upon an exact continental parallel to these bank-barrows during a recent trip to Schleswig-Holstein. Three such exist between the towns of Schleswig and Eckenförde, about eight miles

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SE. of Schleswig; they lie to the west and north of the village of Kochendorf, between a lake called Windebyer Noor and the deep fjord of the Schlei. None is marked on the national map (scale 1 : 25,000, sheet 302).¹ The first (Lat. 54° 28' 50"; Long. 9° 44' 5" E), only very imperfectly recorded on Dreyer's map of 1860, lies west of an old ford called Dürwade; here an old and doubtless prehistoric east-and-west track crosses the Osterbek, running from Eckenförde on the east by Schnaap, north of Kochendorf, through Götheby-Holm and Fleckeby towards the main north-and-south route beyond Schleswig. The bank-barrow is at least 380 metres (about 1250 feet) long, but may be much longer, as its western end fades gradually out in cultivated fields and the eastern end is also uncertain. Parallel to and almost in contact with it are three long barrows, two on the north (about 65 and 70 paces long) and one on the south (rather shorter, but cut through by a modern field-bank and therefore difficult to investigate). Immediately to the south is a group of four and perhaps more round barrows.

There are two more bank-barrows in the wood of Christianshöh, between Kochendorf and the Schleswig-Eckenförde-Kiel road, and east of the lake called Gr. Schnaaper See. The westernmost (Lat. 54° 29' 25"; Long. 9° 45' 40" E) cuts across the angle between the main road and the sandy track to Christianshöh and Kochendorf. It can plainly be seen as a bump in this track and in the boundary banks on either side. In the field west of the track it appears as a low mound of loose soil of a lighter colour and more stony than the rest of the field. The mound is oriented ENE.-WSW. and the eastern end is in the forest, just south of the main E.-W. ride running parallel to the main road and some 130 metres south of it. It is about 600 metres long. It is difficult to discern on account of the fir-trees; but the third, which lies about 500 metres east of it is easier to trace (Lat. 54° 29' 30"; Long. 9° 46' 20" E). It is oriented NE.-SW. and crosses a cinder-track leading from the main road to a house near a shooting-butt. Measured along the mound itself, its SW. end is 190 paces from the point where it is crossed by the cinder-track. The width is about 20 paces, and it is still at least 2 feet high at its best preserved points. It crosses the main road at the NE. corner of the wood where the road to the house enters it, and there is a very well-preserved fragment visible in the hedge immediately east of the gate here. It is plainly visible as a bump in the hedge on the north

¹ The national maps of Germany do not mark any antiquities except those which are prominent topographical features, and even these are undescribed. Of the 32 barrows visited that day only 6 are marked on the map.

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side of the main road (PLATE I, FIG. 2), and can also be seen (less evidently) in the next (north and south) field-bank, beyond which it disappears. The total present length is 450 metres.

None of these bank-barrows has any visible ditch ; but then neither have any of the round barrows. If such ever existed they have disappeared in the loose sandy soil. (It is to be noted that often no traces of ditches are visible on the surface even when, as in the case of that celebrated linear earthwork, the Danewerk, they have been proved to exist by excavation). Nor are any large boulders or other megalithic remains now to be seen in or around them. This, however, proves nothing, for such may well exist beneath the surface, or have been removed in later times. All three are closely associated with groups of round barrows. (On the day I inspected them I also saw and marked on the map no less than 26 round barrows within a radius of two kilometres north and west of Kochendorf ; and there is probably another large group immediately south of the village).

There seems every reason to associate these three bank-barrows 380, 450 and 600 metres in length, with the three at present known in Dorset. Possible Germanic or Danish affinities have already been suggested for our Kentish megaliths ; and although it is a long way from Schleswig to Dorset there is no reason to suppose that some connexion may not exist. The complete clearance, by excavation, of one of the Schleswig bank-barrows is an undertaking that would be welcomed by British students, and may be commended to the attention of the very active Kiel group of archaeologists. (The westernmost bank-barrow, near Dürwade, would probably be the easiest to excavate, since it is not encumbered with trees).

In conclusion, I wish yet once more to thank Prof. Schwantes and my other kind friends, of Kiel, and particularly Dr Jankuhn, Dr Kersten and Dr Haseloff, without whose help I might never have come across these interesting objects. The three bank-barrows are incidentally mentioned (with a site-plan) in an article by Herr Willers Jessen, of Eckenförde, published in *OFFA*, Band 2, 1937, pp. 105-110. They are situated near the Oster Wall, probably an eastern continuation of the Danewerk or of the associated Kograbben ; and it was on account of this fact that I came to visit the district in the first instance.²

Since writing the above my attention has been called to published plans of stone-set burial-places in Schleswig-Holstein. For this I am

² An article on the Danewerk by Dr Haseloff, is published in the same number of *OFFA*. Dr Haseloff has promised to write an account of the Danewerk for *ANTIQUITY*.

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indebted to Dr Grahame Clark. One of these, whose breadth-length proportion is 1:15, is at Tarbek, Kr. Segeberg (*Geschichte Schleswig-Holsteins* Band 1, lieferung 3: tafel 13: by Gustav Schwantes). The actual length, however, is not stated and the plan has no scale. The burial-place itself consisted of an arrangement of 6 boulders (two on each side and one at each end) covered by two capstones, the whole at right-angles to the long axis of the setting, a characteristic feature of the monuments in this region, as contrasted with those of Denmark. There appears to be, in these ultra-long settings, no difference in width at either end; they are long narrow rectangles. Remains of the covering-mound seem to be indicated in the published profile of the Tarbek monument.

These monuments are obviously identical in character with the bank-barrows we have been discussing.

NORSE RELICS IN ONTARIO

The following note is reprinted, by permission, from the *Geographical Journal*, April 1938, xci, 395-6. We may say that information about the discovery had already reached us privately, but without the necessary permission for publication.

'We have received from Mr Philip H. Godsell, of Fort Garry, Winnipeg, an account of the finding of what are alleged to be Norse weapons and armour in northern Ontario. These relics were found at various times during the last three years on the mining claim of Mr James Dodds, north of the village of Beardmore, 125 miles northeast of Port Arthur. The finds were made by at least four men on various occasions, while "a university professor dug up part of a Viking sword in the same area last year". According to Mr Dodds, his first find was made as far back as 24 May 1931, but attaching little importance to it, he left it for two years until its value was pointed out to him by Professor Burwash. They then agreed that nothing should be said about it until the articles had been submitted to the examination of competent authorities. The total find consists of a sword, a battle-axe, a shield handle, and pieces of rusted armour.

'Largely through the generosity of Mr Sigmund Samuel, all the relics have been secured for the Ontario Museum. They have now been photographed, and copies submitted to authorities on Norse archaeology in Europe. According to Dr Currelly, the Director, there is complete agreement that they are of one period, and are to be dated between

PLATE I

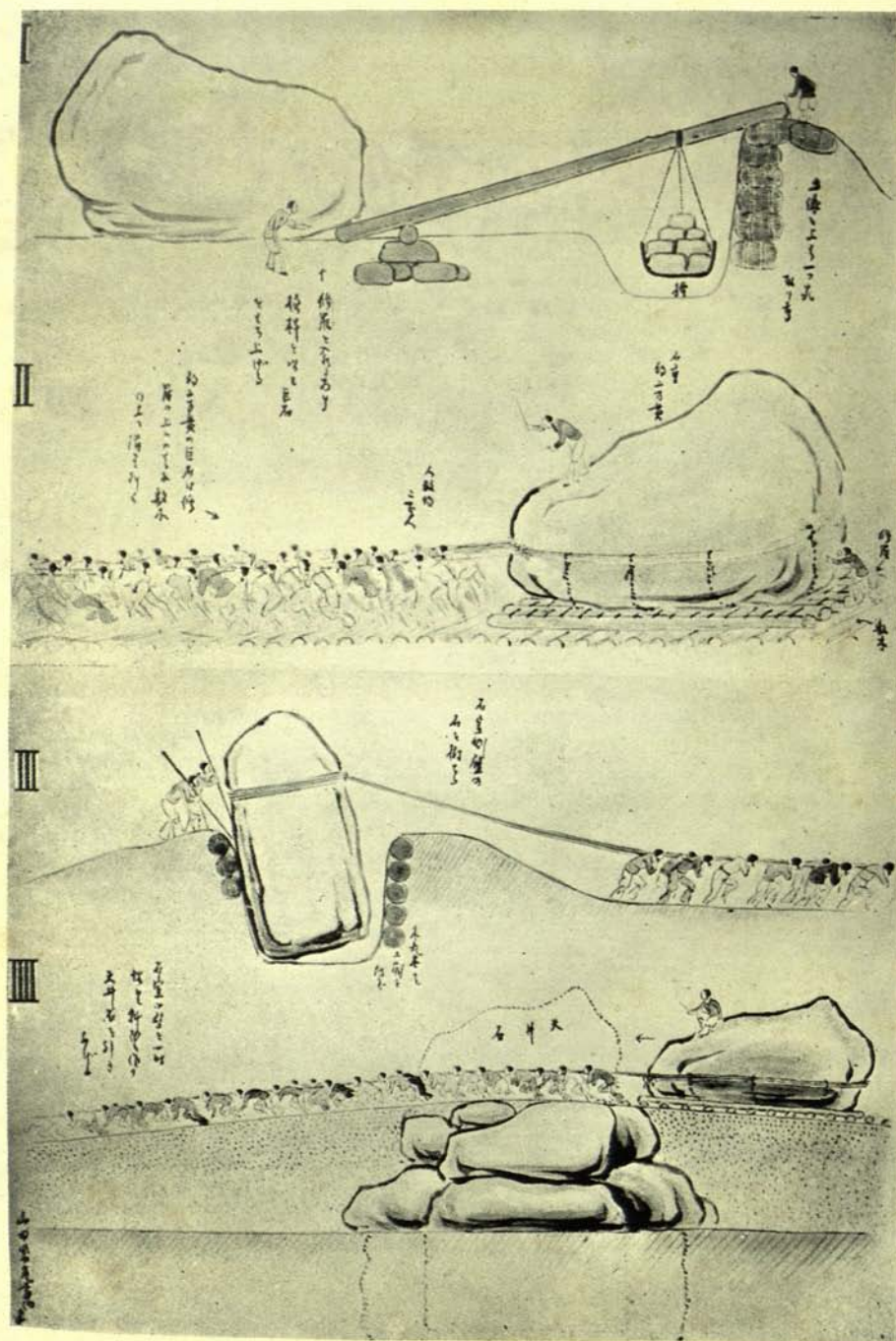


FIG. 1. BRONZE SHAFT-HOLE AXE OF SICILIAN TYPE, FROM THE BEACH NEAR HENGISTBURY HEAD
Length 4.9 in. (See p. 225)
British Museum



FIG. 2. BANK-BARROW CROSSING THE SCHLESWIG-ECKENFÖRDE ROAD
The rise in the hedge is where the bank-barrow passes through it. (See p. 230)
Ph. O. G. S. Crawford

PLATE II



MEGALITHIC TOMB, ISHIBUTAI

drawn by Shiko Yamada (see p. 233)

Professor Takahashi's suggestion as to how the stones of the Ishibutai Dolmen were handled.

- I, Raising great stone by means of radiating levers and weights, so as to get a sledge under it.
- II, Stone being dragged upon the sledge.
- III, Orthostat being set upright.
- IV, Cap-stone being slid up an earthen bank into position.

PLATE III



FIG. 1. STONE GRAVE, MYSORE : SIDE VIEW OF CAIRN. (See p. 234)

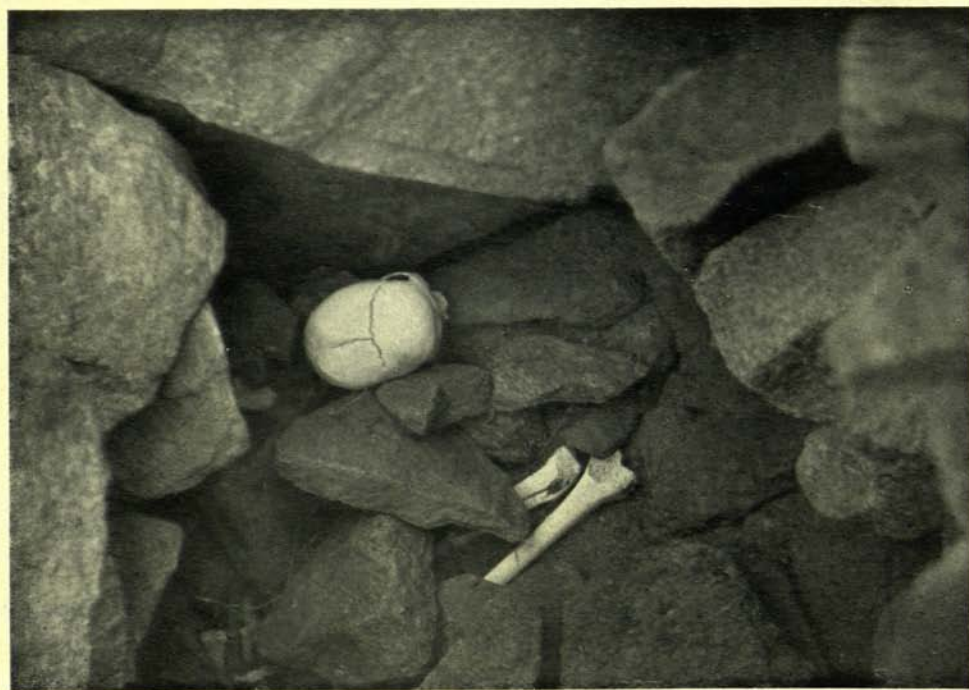


FIG. 2. STONE GRAVE, MYSORE : VIEW OF CHAMBER FROM ABOVE. (See p. 235)

PLATE IV



FIG. 1. PAINTING ON HEADSTONE OF A
CHAMBERED TOMB, GANGAS DE ONIS,
ASTURIAS, NORTH SPAIN



FIG. 2. ENGRAVED STONE, LOUGHCREW, IRELAND

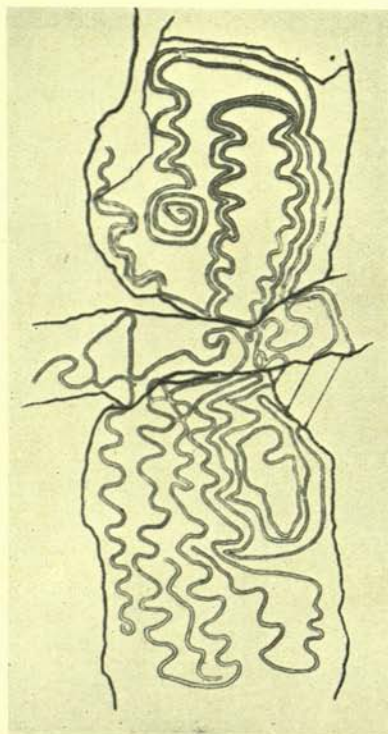


FIG. 3. ENGRAVED STONE, BRYN CELLI DDU, ANGLESEY

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A.D. 950 and 1000. Professor D. McArthur, Deputy Minister of Education, is preparing a report for submission to the Legislature.

The publication of this report will be awaited with much interest, for in view of the implications of the find it is of the highest importance that its authenticity or otherwise should be determined as soon as possible'.

MEGALITHIC TOMB, ISHIBUTAI* (PLATE II)

Ishibutai is a dolmen with a passage 11.59 m. long leading to a chamber 7.62 m. long, and 3.36 m. wide and 4.72 m. high. One of the roof stones is 5.42 m. long and weighs 77 metric tons. It has lost its mound, but the excavation revealed that this had been a square of 170 feet (51 m.) revetted with boulders: this was surrounded by a dry ditch 26 ft. (8 m.) wide and an outer bank 23 ft. (7 m.) wide, making the outer dimensions 300 Japanese feet—91 metres. There was no evidence as to the shape of the upper part of the mound; it was probably a round barrow, possibly rising from a doubly terraced square.

The contents of the dolmen had long disappeared, but fragments of *Haji* and *Iwai* ware have suggested a date about the 7th century A.D. This agrees with the idea that this is the Momo-hara tomb in which Soga-no-U-ma-ko, who died in 626 and had a house at Shimanosho, was buried. In the middle of the 7th century the Emperor Kōtoku prohibited the building of great stone tombs because of the waste of labour they involved. The interest of all this for us is in the apparently independent existence of megalithic monuments at the other end of the world and their erection to the honour of historical persons. It makes us less inclined to link up outlying patches of megaliths with those of western Europe.

Professor Takahashi, an engineer, discusses the means whereby the stones were handled. (See PLATE II). His explanation of how the stones were transported and set up is: (I) lifting a big stone with a series of weighted levers radiating from it, so that the sledge to run on rollers can be slid under it; (II) the stone being moved by man power; (III) method of dropping an orthostat into its position; (IV) method of dragging a cover stone into place. Drawn by Shiko Yamada. In the

* University of Kyoto, Department of Literature. *Report on Archaeological Research*, no. xiv. Hamada, Kosaku. 'The Megalithic Tomb Ishibutai at Shimanosho in the Province of Yamato'. 86 pp. Japanese text; 15 pp. English summary; 57 plates, 31 text figures. Kyoto, 1937.

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text the leverage obtained by these methods as applied to a stone of 77 tons is exactly calculated ; this is not a fancy picture.

Professor Umehara adds a corpus of the other dolmens (fifteen) of Japan with good diagrams and some views and plans of the sixteen square barrows. But alas he does not transliterate the names in English, which should have been quite easy. ELLIS H. MINNS.

✓ BURIALS IN MYSORE STATE (PLATE III)

The following report has been received from Colonel G. A. Beazeley, formerly Director of Surveys, Southern Circle :—

Between Tumbinkere of the Mandya Taluk (69th mile) and Hadisetti-halli of the Seringapatam Taluk (76th mile), the Bangalore-Mysore road passes through a hilly country with a number of stony heights. Here are the villages of Muddanahalli, Kadusettipura, Ganangur, Gaudhalli, etc. The people of these villages observe certain peculiar customs in the disposal of some classes of the dead. Normally corpses are buried in the earth by Vokkaligas, Adikarnatakas, Goldsmiths and other communities. But in some cases where the dead person was suffering from leprosy, lucoderma, consumption or puerperal complications the body is not buried in the earth. The villagers believe that it would be a sacrilege to bury such a body and that mother earth would not yield them crops if she was thus insulted. The villagers think that the natural elements refuse to absorb these bodies and in some cases the deceased body thus buried is exhumed and burnt. Usually such a person is conveyed after death to a neighbouring hillock and disposed of by what is known commonly in many parts of the Mysore State as 'Kallu seve' or disposal by stones. The corpse is placed on the ground in a sitting posture close to a rock and smaller stones are placed upon each other to form a kind of wall enclosing the corpse in a small chamber (PLATE III, 1).

I examined about a dozen of these burials in the necropolis to the northeast of Muddanahalli hill, and about another dozen of them on a height known as 'Naragunji kallu bore' near Ganangur. In some of the recent burials the skeletons were still partly in a sitting posture. I was informed that the last burial in the former place took place about six months ago and the last one in the latter place about two months ago.* In both the places even the bamboo biers used for carrying the corpses

* This was in 1935.

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were lying near by. Part of a pillow was also found. In one of them tresses of long hair and some bones still covered with parts of skin could be seen through the hole in the top of the chamber. The place had still a foul smell. A shepherd boy informed me that the village goldsmith's mother was buried there three months ago.

This proves definitely that the custom is still current. None of the burials showed signs of considerable age. None of them could be identified as prehistoric. Many of them contained complete skulls, generally of women, and also other bodily bones like vertebrae, thigh bones, etc. (PLATE III, 2).

M. H. KRISHNA.

Director of Archaeological Researches, Mysore, 1935

MEGALITHIC PAINTINGS AND ENGRAVINGS (PLATE IV, FIGS. 1-3).

It is a long time since the suggestion was first made that the Megalithic culture spread up the Atlantic coasts of Europe from the South, and connexions between Spain and Ireland in very early times have been postulated. In the following note I merely wish to illustrate three pictures which seem to me to show a general similarity of design, and which can therefore be used as a further argument for this hypothesis.

The first is a painting on the headstone of a small chambered tomb at Gangas De Onis, a site in Asturias, North Spain. On the tumulus which covers the Megalithic tomb there has been built a Christian church, the Capilla de Santa Cruz. Some time ago the Conde de la Vega del Sella obtained permission to make a hole in the chancel and investigate the monument below. The painted headstone is reproduced by him in No. 22 of the *Cómision de Investigaciones Paleontológicas y Prehistóricas*, Madrid, 1919. (FIG. 1).

The next comes from one of the ruined tumuli at Loughcrew, Ireland. The similarity with the Spanish finds is striking. (FIG. 2).

The third is the well-known engraved stone found buried in the centre of the mound at Bryn Celli Ddu, Anglesey, which was investigated and published by Mr Wilfrid Hemp. I cannot but feel that while the likeness is not quite so striking perhaps, there is a close similarity with both the Spanish and Irish examples. (FIG. 3).

M. C. BURKITT.

Reviews

✓ THE DOCTRINE OF SURVIVALS, a chapter in the history of scientific method on the study of Man. By MARGARET T. HODGEN. *Allenson & Co.*, 1936. pp. 192. 5s.

To one who has lived through the greater part of the time under discussion, this book is of particular interest as it recalls the personality and contributions to science of many of the protagonists and the lively discussions at the meetings of various scientific bodies; but, at the same time, the book illustrates how much is missed when the great men of old are interpreted solely by their writings.

Professor Hodgen refers to the discussion in the sixties concerning the supposed degeneracy of savages on the one hand and the belief that they were merely laggards in progressive evolution on the other. Dr E. B. Tylor introduced the term 'survivals' to indicate those customs and beliefs in more advanced societies which he found to be vital in primitive communities, and thus he argued in favour of an evolution in civilization marked by the milestones of survivals which had no special functional relation with the civilization in which they are found. The work of Tylor re-enforced, but in another field, the stimulus given by Darwin to biology. Subsequently many students worked on similar or analogous lines of investigation in folklore, sociology, marriage and the family, comparative religion, and the like.

An analysis of the conceptions of L. H. Morgan in his *Systems of Consanguinity* and *Ancient Society* as compared with those of Tylor makes it clear that neither Morgan, nor McLennan in his books, anticipated Tylor in the formulation of a doctrine of survivals in the strict sense of the term. Andrew Lang worked largely in the fields of primitive religion and ritual, magic and mythology, and opposed Max Müller's philological explanations of the irrational elements in mythology, which he explained by the doctrine of survivals. The interests of G. Laurence Gomme were primarily historical, secondly evolutionary, and not at all psychological. He demonstrated what could be done with survivals in the reconstruction of the historical past and he regarded survivals as the arrest of the natural growth of ideas and practices due to the conquest of an indigenous and backward people by one more advanced. Impaired elements endured side by side with elements whose development had not been interrupted and he endeavoured to discover a relative chronology for such survivals.

The discussion of the origin of religion by Tylor and Robertson Smith 'was conducted against a background of parochial misinterpretation of primitive

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man and fear of the impairment of orthodox faith by the use of anthropological data . . . 'Tylor's resolution of the conflict between polemical expediency and unencumbered inquiry was the theory of animism' and he assumed that true religion precedes the religious act, but Robertson Smith 'asserted that religion is not essentially a system of ideas, but a body of fixed and traditional practices'. J. G. Frazer and R. R. Marett adhered to the 'conviction that religion is ultimately to be referred to psychology, to belief rather than ritual', but both felt compelled to modify Tylor's theory of animism: Frazer to a pre-animistic stage of magic and Marett to 'a new category for religious rudiments of a non-animistic and emotional nature'.

Largely due to the enthusiasm of Jane E. Harrison 'Hellenists, following the procedure of the developmentalist, began to scrutinize them [the classics] as documents, and to employ them with other folk-lore materials as reflectors of "older and cruder ideas in petrification"'.

Professor Hodgen draws attention to the revival of doubt about the validity of the doctrine of survivals and her discussion of modern criticisms is of value. 'No effort has been made, until very recent years, to distinguish between those which might more properly have been considered parts of cultural stages later than the first savage condition. The insistent question, "what period, what state of society does the survival survive from?" though frequently asked, has seldom been answered'.

The book is a well documented study of the genesis, growth in various directions, and even in the decay of a concept by a clear-sighted detached student. There are several misprints and, as might be expected, some statements open to question.

A. C. HADDON.

TOTEMICA, A SUPPLEMENT TO TOTEMISM AND EXOGAMY. ✓

By SIR JAMES GEORGE FRAZER. *Macmillan*, 1937. pp. XII, 518. 25s.

Sir James Frazer in the title of his last book describes the new work as a supplement to his previous monograph on Totemism. This exactly is what it is; new data are provided, but there are no generalizations. Evidently Sir James has not found anything in the new material to cause him to modify the conclusions and hypotheses which he had expressed previously. Half the book is concerned with Totemism in Australia, 'the classical land of Totemism'; other parts of the world are dealt with briefly, some very much so, perhaps because the interest of observers has lain mainly in other directions.

Archaeologists will be interested in chapter VI, 'Totemic rock-paintings in West Australia', in which Sir James gives the essential information; but no mention is made of rock-paintings in other parts of Australia, presumably because they have not been equated definitely with Totemism. Professor Elkin is

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quoted as stating, 'all we can say is that the function of the wondjina paintings is to ensure the regular recurrence of the wet season, the normal increase of edible animals and plants and possibly also of useful objects like ochre, the influence of the sun, and the availability of the supply of spirit-children . . . The efficacy of the special paintings is associated with the fact that they are *Ungud*, that is, belong to the far-past creature time. Preservation of continuity with this period is essential for present prosperity'.

Sir James naturally alludes to the analogy which may be traced between these paintings and those prehistoric paintings in southern France and northern Spain, and he subscribes to Salomon Reinach's theory, 'that the paintings were designed to secure success in the chase of edible animals by means of sympathetic or imitative magic'.

It is needless to add that the book is written with the clarity to which Sir James has accustomed us and that the data are scrupulously documented.

A. C. HADDON.

SCANDINAVIAN ARCHAEOLOGY. By H. SHETELIG and H. FALK. Clarendon Press, 1937. pp. 458, 62 plates, 33 text-figures. 18s.

The work of two distinguished authors, each a master in his chosen field, this book should appeal to archaeologists and students of words alike. The archaeological chapters by Dr Haakon Shetelig, whose studies are well known to English and Continental readers, occupy nearly three-quarters of the book. They cover the whole field of Scandinavian archaeology from the retreat of the ice-sheets and the earliest settling of man to the far-flung exploits of the Vikings. The arrangement is mainly chronological, but this has not been rigidly adhered to, several important subjects being covered in separate chapters. Among these may be noted one on the subject of the Bronze Age rock-engravings, another of great fascination and insight dealing with the whole subject of runes, and a third describing the decorative art-styles of the Iron Age between 450 and 1100. The treatment of the archaeological chapters is largely descriptive, the rich material available being on the whole well displayed without an over-elaboration of technical detail. The conservative tendency and the concentration upon established facts is probably all to the good. The descriptive matter is well supported by the half-tone plates and a certain number of line-drawings. A serious omission, which must be mentioned, is the lack of maps, the provision of which would have made clearer the sometimes complex relationships of the various parts of Scandinavia with the outside world at different periods of time. The bibliographical foot-notes supplied at the bottom of the pages will be found adequate to afford the reader an introduction to the more important sources.

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The closing chapters of the book, dealing with broad aspects of life in Scandinavia in early times—subsistence, dwellings, costume, seafaring, weapons and religions—are from the pen of the late Professor Hjalmar Falk, joint author of the standard works on Norse etymology and master of a wide and exact knowledge of early Norse literature. In writing these chapters Falk was, in effect, summarizing a series of his own monographs, so that it has been possible to omit bibliographical references. By piecing together the social and cultural implications of the history of words and their use Falk has succeeded to a remarkable degree in making real and vivid the life of the past as it was really lived.

What makes the book of unique interest is the way in which two different and distinct approaches converge to give a unified and lively conception of the way men lived in the distant past. From the point of view of the archaeologist in particular the later chapters are important, if for no other reason than that they accentuate the limitations to a full understanding of human societies of the past inherent in purely archaeological material. To visualize what we should know of the Vikings, for example, without the runes and the sagas is a first step towards realizing how little we know of the megalith-builders or the folk who made the Bronze Age rock-engravings of Bohuslän. J. G. D. CLARK.

SCHIPENITZ: Kunst und Geräte eines Neolithischen Dorfes. By OLEH KANDYBA. Vienna: Anton Schroll; Leipzig: H. Keller, 1937. pp. 156 with 574 figs. 24 MARKS.

A fully integrated survey of the 'Neolithic' Painted Pottery cultures of southeast Europe, when it comes to be written, will bring about an immense advance in our understanding of prehistory. Meanwhile studies of individual sites and regional groupings must prepare the way, and few of them are likely to be more useful than this new study of the long-familiar site of Schipenitz. The place lies on the left bank of the Pruth, 15 km. northwest of Czernowitz in the Bukovina, which, while geographically continuous with the Ukraine, used to be the most easterly territory of the Austro-Hungarian Empire. Thus most of the material from the excavations (1893-1914) went to the Naturhistorisches Museum at Vienna. There was unhappily little scientific control in the field, and though we hear of large pit-dwellings, hut-sites (one quadrangular) with traces of fire, and a potter's kiln, proper planning and stratification are to seek, and the material, mainly pottery, has to be studied on its own merits and in the light of comparisons with related sites elsewhere. The first to undertake this was Prof. Gordon Childe, whose paper of 1923 (*J. R. Anthropol. Inst.* LIII, 263-288) is the chief landmark on the way to the present work.

Dr Kandyba, from his seat of vantage in Prague, is anxious to interpret to West European readers the Polish and Ukrainian sources of much of the

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essential comparative material, in due relation to the better known archaeology of the Danubian countries. He thus very properly first stresses the basic unity of the 'Bandkeramik' area—from Bohemia to the Dniepr, with its outliers as far south as Thessaly—wherein Painted Pottery simply becomes a more and more prominent element as one travels south-eastward. For those inclined to consider it primarily from the Near Eastern point of view, as a self-contained phenomenon tempting direct comparison with Tell Halaf, Susa, or Anau, it will be especially instructive to consider it in this light, together with, for instance, the distribution of the wholly European 'shoe-last celt', or plano-convex stone hoe. The author offers a fivefold chronology for the Ukrainian (or Tripolye) culture. A₁ (Nezvěska) begins with linear-incised and pitted ware, answering to 'Danubian 1', as well as Painted; A₂ (Zališčky) comprises Schipenitz A; the 'transitional' Horodnycja phase is largely represented by a gap between this and Schipenitz B, which begins little before the main B₁ or Bilče Ukrainian phase, and only just lasts into the final B₂ or Košylyci. It is Schipenitz B which provides the great bulk of the site's painted ware, and the excellent drawings in line and wash provide (though in monochrome) a first-class repertory of the marvellous designs, which should be of the highest interest to students of abstract art today. Their evolution is traced in close connexion with the form-typology, which is also clearly and fully illustrated. The coarse 'C' pottery, with its rough surface and comb decoration, should take its place in any consideration of the relations between the Ukrainian cultivators and the more primitive forest-dwellers to the north of them. The well-known figurines, as well as the stone, flint, bone, and horn implements, are adequately treated. Metal is virtually, or totally, absent.

The book ends with a brief summary and a comparative table but absolute chronology is not attempted. With its 574 illustrations one would yet have welcomed one coloured plate; it is hardly fair to leave the reader's colour-sense alone ungratified where colour is so predominant in the material presented. But it remains a credit to both publishers and author, and to the editor of the series in which it appears, Prof. Oswald Menghin, and it is a great pity that its price is not more accommodating. CHRISTOPHER HAWKES.

DIE MITTLERE BRONZEZEIT IN ÖSTERREICH. By KURT WILLVONSEDER. *Vienna: Anton Schroll; Leipzig: H. Keller, 1937.* 2 vols., pp. 482, 10 text-figs., 56 plates, 1 folding map. 36 MARKS.

This two-volume study of the Middle Bronze Age in Austria also forms part of Prof. Menghin's series, and to its admirable format the same appreciation applies: '2 vols.' has a ponderous air, but Dr Willvonseder's pair, though not inexpensive, are each of compact and convenient size, and their separation

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facilitates reading, since the first comprises the main text, the second the catalogues of sites and finds, bibliography, and plates, and one can thus keep two places open at once. The subject is important both in space and time. Present-day Austria, with its western provinces connected naturally with south Germany, its eastern with Slovakia and Hungary, lies astride a cultural frontier which has shown its significance in almost all ages of European history. And the elements of the Middle Bronze Age, in Central Europe as in Britain, reward analysis by displaying an equilibrium between Early Bronze Age incomings and Neolithic survivals, which is perhaps the most vital fact about the passage from the earlier to the later prehistoric phases. Dr Willvonseder deserves great praise for his handling of these opportunities. He shows that in western Austria, as in south Germany, the Early Bronze Age (Reinecke's A) included the survival of both the Pile-dwelling and the Corded-ware cultures of the Late Neolithic, while in eastern Austria he defines a number of distinct groups outside the classical Aunjetitz area north of the Danube: Wieselburg (Childe's Gata), Mad'arovce (Childe's Veselé), the Baden culture continuing from the Late Neolithic, a *Litzenkeramik* group with a probable Corded-ware origin, and a Böhleimkirchen culture in which Neolithic Laibach and Bell-beaker elements were combined under Aunjetitz influence. The culmination of the last-named is seen in the A2 (not B) inhumations of Gemeinlebarn (where the cremations belong to C, and the famous fibula to the Urnfield period D: there are no 'Aunjetitz fibulae'). Thus the Middle Bronze Age does not start from any uniform Aunjetitz 'continuum': its basis is the fusion of Late Neolithic elements, in various groups, with Early Bronze Age influences, not only from Aunjetitz, but in the west also from south Germany, in the east from Slovakia and Hungary (the latter of course manifest especially in the bronzes). This demonstration is carried through largely by a careful analysis of pottery, and for pottery and bronzes alike the main framework of the book is provided by exhaustive typological and comparative study embracing every object of the Middle Bronze Age periods B and C known from Austrian soil.

The result is the recognition of two provinces of Middle Bronze Age culture, each founded on the basis just described: the western is one with that of South Bavaria, the eastern with that of Slovakia and West Hungary. The Salzburg copper-mines were at work as early as A2 and B: settlements, often lamented as absent in this period, are quite plentiful (though unhappily no plans are reproduced here); and lastly the typical sepulchre is of course the barrow, in virtue of which these provinces take their place in the greater unity of the 'Tumulus Bronze Culture' of Central Europe generally. The West Austrian barrows, Bavarian in type, are derived from the Corded-ware barrow tradition present in south Germany: the eastern must have a parallel origin of their own,

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but this is less adequately traced, since we are not told enough about the relevant Corded-ware people of south Moravia, and about the analogous *Litzenkeramiker* of Lower Austria too little is yet known. In the ensuing Late Bronze Age, barrows vanish before the incoming Urnfield peoples, but pottery shows that the older population remained in part at least to be absorbed, the western into the Knoviz group, the eastern into the true Lausitz.

The inspiration of Reinecke, manifest throughout the book, is well shown in the absolute chronology—viz. Period B begins 1500–1450 B.C., Period C 1250. There is some justification for these figures, but for the short life assigned to C—only 50 years—we are not given enough, especially as it is usual to equate this with two-thirds of the whole North-European Period II (Müller 3 and 4). However, this is not a major point in assessing the book as a whole, and it is safe to say that it will be widely valued. How much one would like to have the Austrian Hallstatt Period similarly treated !

CHRISTOPHER HAWKES.

THE QUATERNARY ICE AGE. By W. B. WRIGHT. *Macmillan*, second edition, 1937. pp. xxv, 478, 23 plates and 155 text-figures. 25s.

The second edition of this standard work has been eagerly awaited since the first went out of print. It is a tribute to the author that the first edition was out of print rather than out of date, and it remains today, in the reviewer's opinion, a first-class and sound introduction to the subject for the serious student, who may then proceed to the second. If the original was a text-book the revised version is, to some extent, a book of reference of carefully chosen and considered information, with selected lists of references inserted here and there.

The general scheme and the plates are similar, but in addition to revision, four new chapters have been added on glacial retreat, the older and newer drifts of the British Isles, the river gravels of the south of England. Within a few pages the two editions are the same size, the use of smaller type has allowed of an increase of about 25 per cent. in the letterpress.

In general Dr Wright has restricted himself to the same regions of the world, and has skilfully avoided thereby some vexed and unsatisfactory questions, the treatment of which might have rendered his book obsolete before it was published. More than that, he studiously avoids the unqualified acceptance of startling or sweeping theories or conclusions : experience shows that many of these do not last long. The book is essentially what it claims to be, a second edition, not a new book ; but it takes note of nearly 25 years of rapid progress and discovery. Experts will probably disagree with some passages—for example, speculation on the quaternary history of the Mediterranean ; some chapters and lists of references might have been even more fully revised ; but are experts ever satisfied ? Specialists will look for some things in vain, or

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be pained because some of their pet theories may be ignored, but they will find in their place a great deal that will be new to them and some very serious food for thought: others will find much that has seemed difficult or obscure clearly and precisely explained.

This publication is a Book of Common Sense, a mine of information, to be recommended especially to archaeologists. K. S. SANDFORD.

LES HITTITES. By LOUIS DELAPORTE. Paris: *La Renaissance du Livre*, 94 rue d'Alésia. pp. 371, 34 text-figures, 3 maps, 4 plates. 40 frs.

This volume is no. 8b. in the French series 'L'évolution de l'Humanité', and aims at presenting a popular account of the Hittites, as far as modern knowledge permits. It is divided into four sections which cover the geography of the Hittite lands and the history of the Hittites; institutions; religion, art and language; the Neo-Hittites.

An introduction gives a sketch of Hittite archaeology, to the commencement of the excavations at Alaca Huyuk in 1935.

The appearance of this work is opportune when it is considered as a popular text-book, but students of the subject will realize that a solid foundation will be laid only with the final publication of the Bogazkoy material. Nevertheless the advance in Hittite studies in recent years has been significant.

The treatment of the geography of Asia Minor and North Syria is adequate, but adds nothing to the work of Prof. Garstang, whose account of the same subject will be preferable for a fuller understanding of the physical conditions, for which the maps in this publication are totally inadequate.

The history has been compiled to all extent and purpose from literary and epigraphic sources alone. The attempt to make the course of events intelligible is cautious, although naturally some conclusions will not meet with universal acceptance—e.g. the date of the Cappadocian tablets (p. 45-6). The outline of the prehistoric archaeology is too brief, and not enough distinction is made between the several cultural complexes of Anatolia, for which Bittel's *Prähistorische Forschung* offers a basis. It is unfortunate that the author was unable to utilize the exceptionally rich finds from Alaca Huyuk to present a more emphatic view of the wealth of pre-Hittite Asia Minor. The history of the Old Empire is obscure and disconnected, but less so than a few years ago. Firmer ground is reached with the New Empire, which is dealt with at some length. The identification of the contemporary geographical and ethnological names is discussed with care, though we note that M. Delaporte equates Alasija with Cyprus (p. 167).

The section on Institutions is of interest especially as regards comparisons with Egypt. When dealing with religion more use could have been made of

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archaeology to fill in a view of the earlier cults, which probably outlasted the Hittite domination. The survey of the arts and crafts is rather sketchy, especially in the provinces of metal work and pottery. M. Delaporte stresses the essential continuity of the ceramic traditions of Central Anatolia, but draws no inferences from this. The complexity of the philological problems connected with the Bogazkoy texts is explained and notes on the component languages are given.

The survey of the Neo-Hittites is short as the author does not consider that these later states can be considered as Hittite in an ethnological sense.

The text-figures are not of great use, and plates 2 and 3 are not enlightening. There is a full bibliography. Turkish place-names are gallicized throughout, despite the approximate official standardization now in use. J. R. STEWART.

PAESTAN POTTERY. By A. D. TRENDALL. *Published by the British School at Rome (Macmillan, 1936). pp. 141, 65 half-tone figures and 36 collotype plates.*

It is a good general rule, though often broken, that a reviewer should avoid a subject of which he is completely ignorant. Yet there are reasons why in this case the rule may be broken. This is principally because certain things need to be said which will never be said by those heavy-weights who contend in the pages of some Journal or Zeitschrift or Revue. So I may welcome as a *Θεία τύχη* the chance which brings *Paestan Pottery* to my table.

In the first place the book is notable as a product of the British School at Rome. For this reason, if no other, it would have a bibliographical value of its own; but it is most gratifying to see how fully it maintains the very high traditions of the institution. Outside the circle of subscribers to whom he immediately addresses himself Mr Trendall deserves to find many readers. The appearance of his work is very timely, for the British School at Rome has been in heavy weather. If, as seems likely, it is obliged to appeal to the generosity of the public, then it is well that the Archaeological Faculty should be able to point to such incontrovertible proofs of its usefulness. There is another, and very important matter which must be emphasized in connexion with the School. Mr Trendall held his post as Rome scholar for two whole years; and it is clear that no shorter period would have sufficed for a study of such range and depth. But unfortunately his case is exceptional. Owing to the dwindling value of grants and scholarships the practice has arisen of sending students for only a few weeks or months to Italy. The result is that only a very few produce published work of any importance. It is not the fault of the students, who show no lack of interest or industry. But it ought to be axiomatic that small grants produce only small results. Our colleges and learned institutions must see to it that the young archaeologists are given sufficient funds to pass the greater part

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of two years in Italy. Be it noted in passing that the American Academy in Rome is faced with similar difficulties and suffers, if a little less acutely, from the same malady.

Now for the book itself. The first thing that will appeal to any experienced eye is the technical excellence of its production. In a thin volume of little more than large octavo form are included 36 full plates and 65 half-tone figures as well as 140 pages of text. And yet it weighs no more in the hand than many a trumpery novel brought out by a second-rate publisher. This is a real triumph, obtained by the careful choice and utilization of paper suitable for each class of subject. The printing also is a pleasure to the eye. No doubt it has all been a labour of love on the part of Messrs. Macmillan, but an author also has much to do with the presentation of his own material, and it is clear that this author has little left to learn in the often neglected art of book-production. As his present study is only a prelude to a larger history of the Greek pottery of southern Italy we may look forward to a magnificent book in the near future.

In the preface it is stated that 'the problem of south Italian pottery is still a rather confused one'. 'The present work represents an attempt to put into order one of its more closely defined fabrics, that of Paestum'. In the last chapter there is a catalogue of all the known vases, and this is accompanied by a register of the museums in which they occur. Many of them are at places so distant as Amsterdam, Berlin, Boston, Brussels, Copenhagen, Geneva, Leningrad, London, Madrid, Paris, Vienna. In Italy no less than 70 are at Naples, 13 at Paestum, 12 in the Vatican, not to speak of smaller collections. They were discovered at sites all over south Italy, but most thickly round Naples from Teano to Velia. It has often been suggested that Tarentum was the place of manufacture, but Mr Trendall argues convincingly for Paestum. The periods and the individual artists are discussed in a careful essay of about 100 pages. In these the reader will make the acquaintance, probably for the first time, with two graceful and ingenious painters named Asteas and Python.

DAVID RANDALL-MACIVER.

BULLETTINO DELLA COMMISSIONE ARCHEOLOGICA COMUNALE DI ROMA. Years 62 and 63. *pp.* 195 and 135; 144 and 76 with many illustrations.

This venerable serial continues to be admirably edited. With it is now combined the Bulletin of the Museo dell' Impero Romano. The two volumes contain numerous articles of much interest for the lover of Rome and the classical archaeologist. A valuable feature is the list of notices of work done in regions outside Italy.

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The year 1934 (vol. 62) is notable in particular for three articles, dealing respectively with the Ara Pacis, the Arch of Titus, and the Saepta Julia. The first of these is by G. Monaco. It is a study in the iconography of the fragments unfortunately scattered between the three collections of the Museo Terme and Villa Medici at Rome and the Uffizi at Florence. Recognizing that one group of personages represents the family of Augustus, a second the family of Drusus and a third the family of the Ahenobarbi the writer concludes that all except Livia and Lucius Caesar have been identified.

The Arch of Titus in the Forum at Rome is described by K. Lehmann-Hartleben in an article devoted principally to the reliefs. He discusses their style and treatment of the scenes with much learning and some originality. It is a treatment that will be stimulating and interesting to those already familiar with the works of Wickhoff and of Strong. How far and in what sense Roman art may be described as simply 'realistic' is always a good theme. The suggestion that the arch may have been intended for a sepulchral monument is novel and startling; it is well argued.

The 'Saepta Julia' and the 'Porticus Aemilia' were situated in the Campus Martius. Various remains of them have been brought to light in the recent extensive excavations. G. Gatti compares the results of these excavations with the information furnished by the 'Forma Severiana'. Two very useful plans illustrate his argument.

The year 1935 (vol. 63) besides several attractive minor articles on statuary and sarcophagi continues one of unique interest and importance on the stratum underlying the Roman Fora. It is written by G. De Angelis d'Ossat, and in the space of 34 pages accompanied by photographs and sections conveys an astonishing amount of information which has never before been published in an accessible form. The summary on pp. 31-34 should be incorporated in every future history of Rome; it gives the geological and palaeontological history in nine periods. These may be roughly indicated as (1) *Maremmian*, immediately succeeding quaternary ocean; (2) the most ancient tufa; (3) volcanic explosions bringing two kinds of *pozzolana*; (4) formation of a stream-system; (5) period of great eruptions, forming a sheet of tufa; (6) the second period of erosion and stream-formation; (7) an important rise in whole ground-level, the Tiber now appears as an important stream; (8) deepening of the stream-system; the contours of the ground begin to assume their present form; (9) arrival of prehistoric man, who settles first on the Palatine and Capitoline hills.

The whole subject is illustrated by drawings and by photographs of the fossils, amongst which *Elephas antiquus* holds the place of honour.

DAVID RANDALL-MACIVER.

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ARCHAEOLOGIA SINICA, published by the *Academia Sinica*, Institute of Philology and History, Nanking. Folio Series, Number One. CH'ÈNG-TZU-YAI, a report of excavations of the Proto-historic Site at Ch'èng-tzū-yai, Li-ch'èng Hsien, Shantung. By LI CHI, LIANG SSŪ-YUNG and others. Nanking, 1934 (published in 1935). pp. XXVIII, 105 in Chinese, pp. XII, 30 in English, 54 plates and coloured frontispiece, 34 figures and tables in text. £2 14s. ✓

The appearance of this work is a great event. It is the first Chinese archaeological publication produced after the western manner, showing the application of western archaeological technique and furnished with an English summary. Its editor, Li Chi, a Doctor of Harvard and Research Professor of Archaeology in the Academia Sinica, was lately in this country lecturing in various Universities. The Institute has been excavating the site at An-yang since 1928 and Li Chi has issued four preliminary reports in Chinese, but the full-dress publication of this great enterprise must await its completion: Ch'èng-tzū-yai being a smaller self-contained undertaking, carried out in 1931 and 1932, has been chosen as the first subject to be published exhaustively.

Ch'èng-tzū-yai (City-wall cliff) is in northern Shantung, about 17 miles east of the capital Li-ch'èng (or Tsinan) and about 80 miles from the sea. It was an oblong city 450 by 390 m. with mud walls still 3 m. high, once perhaps 6 m. high and 9 m. thick. Under the surface-soil was a barren layer of hard yellow earth thinning out from the walls to the centre and certainly derived from the degradation of the walls: below this a layer 2 or 3 m. thick of greyish yellow earth and then the virgin soil. This greyish yellow deposit has running through the middle of it a thin layer of silt: this is very important as it marks a period when the site was deserted for a while and definitely separates two cultures distinguished by their pottery.

The pottery was the main thing, as no remains of buildings could be defined and the stone artifacts offer nothing special: the pottery was about half and half hand-made and wheel-made, the latter slightly preponderating in the upper layer. About a quarter of the hand-made pots bear mat impressions upon them; other pieces bear lines and ribs made upon the wheel. There is but little decoration, triangles and hatchings, a complete contrast to the famous painted wares.

In the upper stratum (Ch'èng-tzū-yai II) pottery is mostly grey and kilns were found in which it was baked apparently out of clay filched from the wall. This layer belongs to a time when bronze and writing were known though very little was found, just a few numbers and marks and one rather pleasing inscription. 'A man from Ch'i has netted six small fish and one tortoise'. This upper settlement has been identified with the capital of the small state of T'an which flourished c. 1200 to 684 B.C.

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In the lower stratum (Ch'êng-tzū-yai 1) the pottery was mostly of a very fine black, sometimes not more than a millimetre in thickness, and beautifully made: a little was hard white ware rather like porcelain body, a good deal of salmon-pink shading into red and some slate-colour. The black ware has been named after the site and will be famous as marking the link between the neolithic age and the Shang: it is occurring under the Shang culture at An-yang. Then we have the very important type of the *li* or hollow-legged tripod with its derivatives the *hsien* and *kuei* (like Giles 6423 + $\sqrt{\text{li}}$) continuous from early neolithic to full Chinese culture. Finally there are oracle-bones, but uninscribed, an earlier stage of those so famous at An-yang. All this shows that here is our earliest real Chinese city, contemporary with the Hsia Dynasty, and lasting from say 2000 to 1300 B.C.

The book is admirably produced and vies with the Japanese publications: while grateful for the English summary by Liang Ssü-yung, and for the proper names, such a difficulty in Chinese, being clearly distinguished, I must make my usual plea that English underlines should be added to the plates, maps and text-figures in future numbers of the series. Of some tables in the text I could make neither head nor tail. I believe that people brought up on the beautiful Chinese characters cannot bear to spoil a page with discordant Latin letters.

ELLIS H. MINNS.

WITH A SPADE ON STANE STREET. By S. E. WINBOLT. *Methuen*, 1937. pp. 1-240, 12 plates and 36 figs., folding map. 10s 6d.

The title of this book indicates in what respect it is intended to supplement Mr Belloc's well-known work. The author has set out to answer various outstanding questions in regard to the course of this famous road. It is evident that at many points he has been highly successful, as, for example, at Hardham (64), Alfoldean (92), Okewood (104-110), Juniper Hall (138), Mickleham Down (144) and Ewell (154). Equally, there are many other places to which attention might have been extended; and '*vita brevis*' no doubt supplies the answer to why this moment was chosen for publication. In view of the title, it may nevertheless occasion surprise that there is no adequate illustration of road-sections or other structural features which the spade revealed. For, apart from its general construction, the road exhibits some highly interesting special features, such as the cuttings and embankments, which would reward a systematic use of the spade with first-class details of Roman road-building in Britain.

More open to criticism is the handling of the archaeological evidence. While the road itself has yielded, in and below its metalling, sealed deposits indicative of its date, the author chooses rather to date the road by dissociated finds made near its course. This fallacious method, too commonly used in

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descriptions of Roman roads, could be employed in just the same way to assign our principal railways to the Roman age.

The general description, vivid and refreshingly interesting, prompts in parts some questions. How many routes of the Imperial age were called after anyone but the Emperor? Did *mancipes* police a road? Did not road-repairs devolve upon the local *civitates*? Rollers (*cylandri*) were known and used in the Roman world, both for agriculture and engineering. Again, is it not worth noting, as an argument for the early existence of the direct route between London and Chichester, that Ptolemy (i, 15, 6) knew its length and based an argument upon it. Readers will form their own opinion on the appendix dealing with Roman Ewell. It is attached to a valuable record of local discoveries: but the statement that the 'home of man for nearly nineteen centuries is not likely to preserve its Roman boundary banks' is belied by the topography of nearly all our smaller Romano-British towns. I. A. RICHMOND.

THE WORLD OF HESIOD: a study of the Greek Middle Ages, c. 900-700 B.C. By ANDREW ROBERT BURN. pp. xv, 263. Kegan Paul, 1936. 12s 6d. ✓

Mr Burn has set himself the most difficult task of all in this second book of his projected trilogy on early Greece. His first book *Minoans, Philistines and Greeks* showed that he was a scholar of distinction, with a free and unconventional mind. In this book he shows how essential for the study of a period such as the Greek Dark Ages, is a highly critical use and selection of the archaeological material. Mr Burn is another recruit to the new school of Greek historians who go to the archaeologist for advice and help.

The author could not have found a more obscure field of research than those Dark Ages which he calls (rightly or wrongly) the Age of Hesiod. Personally I am no believer in the 9th century date of Hesiod. I can see no reason to date him earlier than 700. For the proposed astronomical date suggested by the famous reference to Arcturus seems to be offset by the specific mention of the festival of Amphidamas of Chalkis, the date of which we know. Mr Burn slurs over this difficulty. But the date of Hesiod does not seriously matter, for whether he comes at the beginning or at the end of the Geometric period does not disturb the issue. The main point is that Hesiod is the only mouthpiece of the age, who faithfully represents, in a good literary medium, a period of which history is almost silent. It is as if we had a Sidonius in the seventh century A.D.

The age of Hesiod was, as Mr Burn shows, an age when the whole social structure and economic organization had changed. Cnossos had grown up in Crete into such a centralized power that its accumulation of wealth and control made it exceedingly vulnerable. While the Middle Minoan periods had been

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characteristic of Crete as a whole, with priest-kings at many places in the island, the Late Minoan periods led to the growth of what is generally called a Palace Style. This is more than a mere archaeological classification. It meant also a Palace Rule and with it the danger of collapse. Minoan society, the author points out, had reached a stage 'when it was particularly vulnerable to one blow . . . very much as in Karl Marx's vision of the nemesis of modern capitalism'. The blow, as we know, fell and Crete faded away. There followed a Heroic Age, here defined as one 'in which barbarians have taken possession of a higher civilization and are breaking it up'. The accumulated capital of the Minoan world was dissipated in adventure that was economically futile and in splendour that was unproductive. Then comes the Dorian crash and the heroes vanish. The world is standardized on a still lower level. Everywhere we find a 'subdued and defensive mentality, prepared to forego vainglory for the sake of protection'. This is the age of Hesiod.

But the Dark Ages of Greece differ from all other Dark Ages in that the Greek outlook saved them from squalor. Homer, who represents the beginning of the period to some large extent, even if his heroes belong to the close of the Age of Vainglory, still, by his depiction of the gods and of Olympus, made men think, and so 'broke the chrysalis of early Greek piety, so that Greek thought spread its butterfly wings'. For Homer did not worry over religion and sought no consolation in other worlds. And Hesiod is his true successor, for even if he mentions magic and talks superstition he does not panic about it at all, and his main task is to tell men to get on with their work. He is as much a humanist as Homer. It was the Greek success that made them ask, when faced with the mumbo-jumbo of the magician, 'Does this practice *really* do good? is this belief *really* true?' And in these questions lies the genesis of science.

Mr Burn devotes much space to all those things that Greeks of this age had both in and on their minds. 'With the breaking up of every conspicuous aggregation of wealth', says the author, 'and with the wholesale slaughter among the lords and heroes themselves, we need not be surprised to find many old magical rites and usages creeping back out of dark corners'. All this—and its cure—are reflected in the lines of Hesiod. But Mr Burn gives us all the horrid detail of Greek superstition, of the human sacrifice probably continued even in Periclean Athens, of the *akroteriasmos*—the severing of the limbs of the dead to prevent them from walking (for an instance compare the recently opened long barrow burial at Maiden Castle) and a host of horrors. This is all to the good, and beneficial to those who think in terms of 'Legacies of the Greeks to Us'. There was a very dark side to Greece in every age. But its darkness was always illumined by some shining streak of pure rationalism.

Mr Burn, having analysed the character of the Dark Age of Greece by

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showing in detail its addiction to magic and the parallel expurgation of magic that developed, gives us a very clear and balanced study of Greek outlook on sex and the nature of family life, of primitive law and custom. He concludes with a carefully documented account of a chosen number of Greek city states, described at that moment when they were on the point of emerging from the Dark Ages to the Renaissance of the seventh and perhaps late eighth centuries. He discusses the origin of coinage, and emphasizes the importance of proto-coinage; he discusses the horse and its uses, and makes a new and interesting point when he calls attention to the exaggerated ways in which the horse is delineated in Geometric art—exaggerated because it was a novelty. He gives us the almost unknown story of Ardys and Kerses of Lydia, one of the best of all ancient tales of adventure, he mentions the forgotten Hymn to Delian Apollo by Eumelus, and reminds us of the high qualities of Thebans—‘they formed a virile and vigorous community with a strong grip on life. At Thebes suicides were held in the deepest dishonour and infanticide was forbidden’. He wisely adopts the Temese-Tamassos solution of a familiar Homeric historical crux, and concludes with a sound summary of those recent historico-archaeological researches which have shown how preliminary trade in the Geometric Age led the way to later Greek colonists.

Mr Burn's book is a notable achievement and should be read by every student of Greece. He warns us, in effect, to get back to our reliable archaeological sources, assured by the tolerable certainty that they alone can tell us what in fact *did* happen as contrasted with what might have happened. Historians, and Mr Burn is a historian, have long needed this discipline. It is, consequently, refreshing to read that ‘Plato is on most matters excellent evidence for what the ordinary Athenian did not think’.

The following criticisms are offered, pp. 126–130: there is a conflict of view: it is on p. 126 suggested that homosexuality, which first developed in Greece in the Dark Ages, may have come from Egypt and Crete, but on p. 130 he maintains the view that it was introduced by the immigrant ‘Aryan’ Greeks to a Mediterranean not addicted to it. The latter is almost certainly right. P. 148, n. 1, inadequate reference. P. 158–9 a very clumsily written paragraph. P. 160, in discussing the use of the ridden horse mention should have been made of the Kikones and their mounted men (*Od.* ix, 49). P. 196, the Aigaleos wall is probably not earlier than 600 and is certainly not Mycenaean. S. CASSON.

STUDIEN ZUR GORGO. By KAISER WILHELM II. *Berlin: De Gruyter*, 1936. pp. 163, and 114 figs.

This is a striking proof of the Kaiser's extensive researches into archaeology and prehistory, subjects with which he has long concerned himself. The idea

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of the book dates from 1911, when the Kaiser personally initiated excavations in Corfu, and found there a Doric stone temple, with a pediment-relief showing a Gorgon between two lions *en face*. Ever since then he has never abandoned the investigation of the origin of the Gorgon-motif. Here he examines its constituent parts, and the way in which the myth took shape. He deals with (1) the half-running, half-kneeling attitude; (2) the protruding tongue and bird-like form; (3) the snakes on the neck and at the waist; (4) the lions *en face*. His investigation was catholic and conducted over a wide area; figures with similar motifs were traced throughout the world, and as far as possible their origin established both as regards locality and period.

The illuminating suggestion is made that the motif of the attitude may have a cult-origin, being derived from a cult-representation of the rising and setting of the sun. It is supported by reference to the leaping-dance of the priests of Baal (1 Kings, 18), which was a year-ritual, and the representation of the Gorgon as half-running, half-kneeling, is thus symbolic of the sun's movement. The bird-motif is likewise derived from the sun; in Asia and in N. America the bird is still the sun's special animal and his symbol. The explanation of the protruding tongue of the Gorgon as having originally been a beak is very convincing, and the illustrations, from different cultural regions, give a clear picture of its development.

From this, the connexion of the 'sun-bird' with the snake can also be explained. The snake, being a creature which comes out of the earth and lives in the earth, is a chthonic element in all mythologies, representing the earth-bound powers that are hostile to the sun. This is why the bird is shown as victorious over the snake, holding it in its beak or devouring it. The lion-motif is traced back to palaeolithic times. The lion is man's enemy conquered by Gilgamesh, fought by Hercules; it also expresses the hostile powers of Evil, and the ever-recurrent representation of a man between two lions is probably symbolic of man's victory over brute force. Here I cannot go so far as to agree with the author in connecting the lion with the sun: it is more likely connected with the snake-motif—hostile, violent, destructive.

In the first chapter the symbolism of the Gorgon is explained very clearly and concisely. She represents the chthonic sun, and is expressive of the chthonic powers, who are conquered; her tokens are the snake, the lion, the fierce facial expression, tusks, wings, and running-kneeling attitude. She is the mother of the infernal regions, and as a primeval goddess is later connected with Athene, who bears her signs upon her shield. Next, the author investigates the temple-site itself, and suggests either that the building represents the earth in the form of a mountain (as is especially common in India and Further India, from Borobodur in Java to the temples of Angkor Wat), or that in the temple the world

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is expressed as a hollow space. This second idea is the underlying motif of the Greek temples, according to the writer, going back to the pile-dwellings of Celebes and Sumatra. The contrast between these two conceptions is already apparent in the two stylistic groups of palaeolithic art: the franco-cantabrian group aims at the darkness of the cave, the concealing of the structure, while the east-Spanish group seeks the daylight.

The book throws such penetrating shafts of light on problems of myth that it is most stimulating to read. HERBERT KUHN.

ENGLISH VILLAGES AND HAMLETS. By HUMPHREY PAKINGTON.
B. T. Batsford, 1936. pp. xvi, 120 with 131 plates and illus. 7s 6d.

ENGLISH VILLAGE HOMES. By SYDNEY R. JONES. *Batsford, 1936. pp. vii, 120 with 136 plates. 7s 6d.*

'The Favourite Village' (which in the year 1800 provided the Rev. James Hurdis an exercise for his peculiarly pedestrian muse) is now a commonplace of conversation, and the search for 'quaint old places' has become established as a respectable English pastime. Mr Pakington has produced an illustrated handbook, on a geographical basis, of English villages. The illustrations are excellent, and the introduction, by Mr G. M. Young, is a first-rate but all too short essay, free from irritatingly chatty arty-craftiness.

Mr Jones has approached the subject from the practical architect's standpoint, illustrated with his own drawings, including sketches of architectural details, foot-scrapers, lead cisterns and the like.

There is one aspect of the English village that should be stressed. Delightfully romantic though many a cottage may appear to the passing motorist, few who do not live in the country realize how mossy thatch and irregular timbering may conceal slum conditions. The villagers prefer the comfort and cleanliness of the architecturally shocking Council houses—small wonder if to them the charm of the picturesque seems a little remote and unreal. STUART PIGGOTT.

THE MEDIAEVAL STYLES OF THE ENGLISH PARISH CHURCH.
By F. E. HOWARD. *Batsford, 1936. pp. 99, illustrated by numerous photographs. 12s 6d.*

This volume is published from notes left by the author, completed and prepared for the press by Mr Greening Lamborn.

Mr Howard was an architect with a wide and intimate knowledge and understanding of medieval churches. A valuable chapter is devoted to hints on the study of church development, with advice on the best way to examine an ancient

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church. Succeeding chapters deal with the architectural styles up to the Perpendicular, and to a study of the transitional periods between them. There is a glossary of architectural terms, an index arranged under counties, and a page of rather inadequate drawings of mouldings. The illustrations consist of excellent photographs of churches and their details.

A certain number of line-drawings would have been a help in elucidating architectural terms and expressions, and the author seems to be better acquainted with the actual fabric of churches than with their history and literature. It is rather misleading to say that the only sources for Angle-Saxon architecture were Roman and Celtic, with no mention of such intermediate influences as those of Byzantium and the Carolingian Empire. Again, the Norman use of plait-work ornament is thus explained:—'From Celtic and Irish sources came the use of interlacing stems, a sort of plait-work in stone' thus ignoring both Anglo-Saxon and Scandinavian lacertine sculpture.

In the chapter on transitional Norman work it is a pity to have omitted the characteristic water-holding base, while the description of roofs is rather technical for the non-expert reader, and here a little assistance in the form of drawing would have been welcome.

DINA PORTWAY DOBSON.

✓ TERRACOTTAS FROM AFRASIAB. By CAMILLA TREVER. No. 93 of the Bulletin (*Izvestiya*) of the Marr State Academy for History of Material Culture. Leningrad, 1932. pp. 52, XIV plates.

Afrasiab is the name given to a mound north of Samarkand, probably the site of the ancient Maracanda. The late Professor N. I. Veselovski dug into it and also acquired the loot from local diggers, and plates were prepared of his collection, which is in the Hermitage. This book furnishes a minimum of historical introduction and a description of these old plates, there is much more material from the site in the Hermitage, the Moscow Museum and at Samarkand. The pieces here published are all terracotta heads or figures or bodies, most of them are said to come from *astodans* or ossuaries, into which bones were put after having been freed from flesh either by the agency of animals or birds, or by direct methods. The types are very various and in them Miss Trever recognizes various Central Asian peoples, Iranians, Tokhars (!), Turks and 'Scythians'. It has been suggested that the figures represent the *fravashes* or guardian angels of the deceased, but musicians, mourners, dancing girls and animals would look more as if they were to be directly useful in the next world. It is a great pity that Miss Trever did not give us a picture of one or two *astodans* in her introduction, so as to show what they are like: she says that those in the Hermitage do not seem to offer place for the terracottas. That certainly seems

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to be true of the astodan figured by Kondakov, Tolstoi and Reinach, *Ant. de la Russie Méridionale*, p. 359, f. 318 : this reference, the most useful to a foreigner, is not given in the Bibliography.

When the rest of the material is published, it will throw some light on the civilization of Eastern Iran in the first five centuries of our Era, with its mixture of Greek, West Iranian, Indian and Nomad influences, but from their setting these heads and bodies do not give us much satisfaction. ELLIS H. MINNS.

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Editorial Notes

THE publication of an historical map of Palestine¹ gives an opportunity of discussing the subject of Period Maps, of which this is the first to be produced outside Great Britain ; it may be said at once that it is an excellent example. The present writer is not qualified to criticize it historically, and proposes therefore to confine his remarks to cartography, of which, as the originator of the Period Maps of the British Ordnance Survey, he has had considerable experience.



The preparation of Period Maps was first adumbrated in general terms in *Man and his Past* (1921), where it was suggested that each country or region should publish maps of its territory as it appeared at successive intervals. For Britain, intervals of about 400 years seem to be the most suitable ; but special periods and aspects may deserve separate maps : *e.g.* in Britain the Viking-Danish period, 800-1066 ; a Domesday and Monastic map. The term 'Period Map' came spontaneously into use because it applies equally to both prehistoric

¹PALESTINE OF THE CRUSADES: a map of the country on scale 1:350,000, with historical introduction and gazetteer [by C. N. Johns]. Survey of Palestine (Jaffa), 1938. 250 *mils* (about 5s). Compiled and drawn under the direction of F. J. Salmon, Commissioner for Lands and Surveys, Palestine, from information supplied by the Department of Antiquities and Père Abel of the École Biblique et Archéologique Française. British Agents: Stanford, 10 Long Acre, W.C.1. and Sifton Praed, St. James's Street, S.W.1.

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and historic times ; and it is not proposed to confine these maps to either sphere. The ideal is a series of maps showing the changing aspects of the territory throughout the whole of the time that it has been occupied by man. Thus in Britain it is hoped eventually to publish a Megalithic map, a Beaker map, maps of the Late Bronze and Early Iron Ages, and several Medieval maps. So far there have been published a map of Roman Britain, of Britain in the Dark Ages² and of Seventeenth-Century England, all on the scale of 1:1,000,000 (16 miles to the inch) ; and a number of maps of parts of Britain (to which ' Period Maps ' is not properly applicable, though often used for convenience).



Period maps represent the impact of modern cartographical technique upon the study of history and archaeology. Historians, since E. A. Freeman and J. R. Green, have always realized, in theory, the need of geographical treatment, but their practice has lagged behind. Today it is possible cartographically to represent a period—any period—against the background of the physical environment which conditioned it, and to represent it in such an objective way that the interrelated facts (*e.g.* settlements, roads, battlefields, frontiers) are apprehended visually, without any of the distortion to which words are liable.³ Green fully appreciated the need of such representation ; but both he and the majority of historians since have been content with small-scale black-and-white diagrams which (though still useful) fall short of the ideal now cartographically possible.



The superiority of the modern type of Period Map on a fairly large scale—anything between 1:250,000 and 1:1,000,000—over the small scale diagram may be illustrated by a comparison. In any war the most up-to-date maps and survey methods have always been used, for the army with the best technical resources has a great advantage over the enemy. That is obvious, but is it not equally obvious that, in order to understand them, we should follow the campaigns of, say, the

² The South Sheet was published in 1935 ; the North Sheet (Scotland and Northern Ireland) is now in the press, and should be ready soon. A map of Monastic Britain (scale of 10 miles to the inch) is in preparation.

³ Of course a map may be thus distorted, by intentional omission or selection of facts ; but it is assumed that the map-compiler's intentions are as honest as those of the historian.

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English Civil War or of the Crusaders, upon maps which enable us to visualize the lie of the land as fully and plainly as possible? When, as happens today, we can produce better maps than could the original combatants, it is clearly our duty to do so; and that is what Mr Salmon has now done.

The Crusader map is much better produced than the map of Roman Palestine which, though archaeologically excellent, was only printed by the Survey Department and was not sponsored by it, as this one is. There is no bewildering array of symbols and names, and the general appearance is good. It is no secret that the map owes its existence to the personal interest of Mr Salmon, who has designed the map as a whole and drawn the ornamental margin and the central panel on the cover. The physical basis is a system of layers, with contours at intervals of 300 metres above and below sea-level. The layer-printing is well done and on the whole effective. Names of the period are written in letters of the period, and the type of letter used is reasonably legible. Modern Arab names are written below the ancient ones, with a valuable distinction drawn between those known to occur in medieval Arab records, and those not so known. Routes, in red, have been traced from the itineraries of pilgrims and travellers of the Crusading Period. Regional names are in red. 'The spelling of medieval place-names is taken from contemporary documents, and is not always consistent'. That is as it should be; consistency in spelling is a modern invention, and an attempt to impose it upon a period that knew it not would have been wrong. Forest areas are indicated by the usual tree-symbols—deciduous and (in a couple of regions) coniferous. These are presumably restorations of contemporary forests, but there is no reference to them in the text.

In addition to the main map there is an inset of the kingdom of Jerusalem (1:2,000,000) and plans of St. Jean d'Acre and of Jerusalem in the text (1:10,000).

We have devoted considerable space to this map, because we regard it as a land-mark and beacon. It reflects the greatest credit upon the Survey of Palestine and upon Mr Salmon himself and his collaborators. Some hint of the difficulties that have been overcome is given by the statement (in a leaflet enclosed with it) that 'the scale of

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1:350,000 was selected because . . . it was the largest which the photographic section of the Department could deal with'. Those in any way familiar with the conditions of map-production overseas can imagine many other difficulties and limitations that were encountered, and can congratulate the Department upon overcoming them so successfully. We understand that it is hoped to publish a map of 'Palestine of the Old Testament' and we sincerely hope that this project will be realized. If Ordnance Survey experience is any guide, Period Maps should also be a profitable venture.



Finally, a few words about other regions. It should surely be possible for the Survey Departments of other parts of the British Commonwealth and Mandated Territories to produce a series of Period Maps. The most obvious country to follow suit is Ireland; it has the cartographic convenience of being an island, with immutable sea frontiers, and it has on the whole a well-documented history. Egypt has already produced maps of the Roman period, and all the material for other maps exists. In Irak this work could be organized so well—but never will be—by a private body that is unwilling to risk excavation there under the existing laws. Cyprus has long talked about producing something of the nature of an index-map of antiquities (which is not the same thing as a Period Map), but so far nothing has been done. India is rather a big proposition, but not unmanageable if a suitable scale were adopted, or if it were subdivided into suitable regions.

We make these remarks because we should like to see the lead already given followed elsewhere. Englishmen have always been innovators, but are not so good at following up their own innovations. Perhaps that will be done by some other country. It would be nice, for instance, to see a map of France in the Dark Ages, of Classical Greece, or of Anatolia. Perhaps the Germans will undertake this.

The Hebrides: a Cultural Backwater

by E. CECIL CURWEN

IN our efforts to reconstruct the life of vanished peoples and cultures we often find ourselves making comparisons with the implements and customs of modern primitive peoples. This practice seems, with due safeguards, reasonably sound, for similar cultural conditions may produce similar cultural phenomena. Our comparative material is usually sought among the backward races of the tropics, less frequently in parts of Europe that are off the beaten track; but it is not generally realized that we have in Britain itself a populous region which, owing to its remoteness, did not emerge from the Iron Age until the end of last century. By 'the Iron Age' we mean that simple state of culture that is found in peasant communities in southern Britain between, say, 500 B.C. and A.D. 1000, extending in a variable degree into the Middle Ages. This stage of cultural development is distinguished from more advanced stages by the prevalence of self-supporting communities which are necessitated by difficulty of communications, and in this respect the culture of the Hebrides as late as the middle of the nineteenth century was more like that of the pre-Roman Iron Age in southern England than any succeeding phase.

Before the invention of the steam and internal combustion engines communication between the Hebrides and the mainland, and between different parts of the Hebrides, was difficult and dangerous, and the people produced little that could attract traders to undergo the hazards of such voyages. Consequently little was imported, and in the villages everything that was needed had to be produced on the spot just as was the case in pre-Roman England.¹

During the present century, and especially since the War, communications have been immeasurably improved by the introduction of motor-boats and motor-cars, and by the making up of the island

¹ This is a general statement, and does not necessarily apply to the households of the chiefs and landed proprietors. Even today, of the 30,000 (odd) inhabitants of Lewis and Harris, the majority have probably never seen a train.

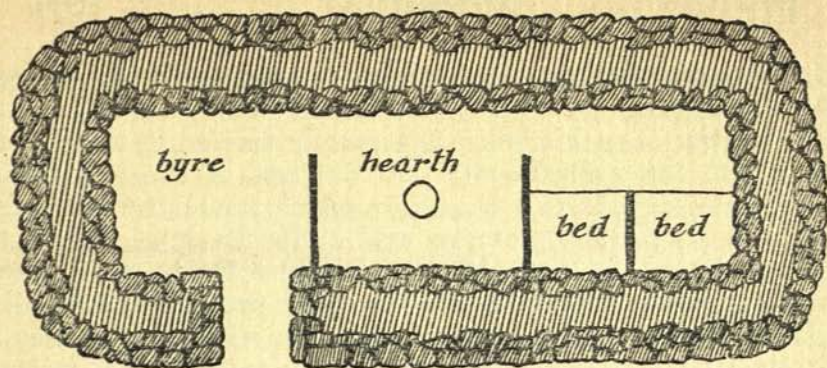
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roads. Little, therefore, now remains to be seen of the functioning of the self-supporting village-community, unless it be the primitive dwellings known as 'black houses', and the shielings.

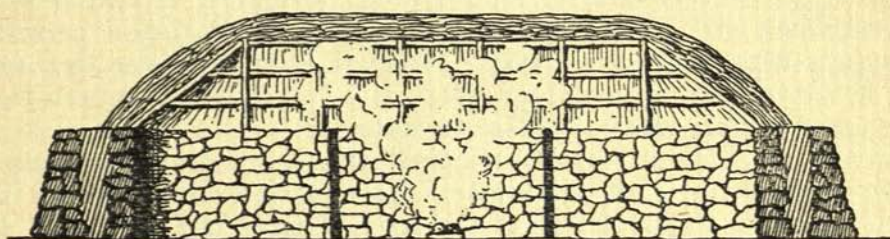
'BLACK HOUSES'

The term 'black house' is a translation of the Gaelic *tigh dubh*, and is applied to the primitive dwellings which may still be seen in large numbers—though not always in their pristine form—in the island of Lewis, and less frequently elsewhere. In their original form they have neither window nor chimney, but have a hearth with a peat-fire in the middle of the floor, the smoke from which finds its way out mainly through the door, and sometimes to a small extent through a hole in the thatch of the roof. A second opening was usually left in the thatch to admit light, and this is nowadays generally furnished with a pane of glass. Many 'black houses' have undergone alterations in the course of time, whereby windows have been cut into the walls, hearths have been moved so as to abut on a newly built stone partition wall, or on an end-wall, and chimneys have been added. In a house of this latter type that the writer entered in Barvas (Lewis) a young mother rocked her baby in an ancient wooden cradle of a kind only found in folk-museums elsewhere.

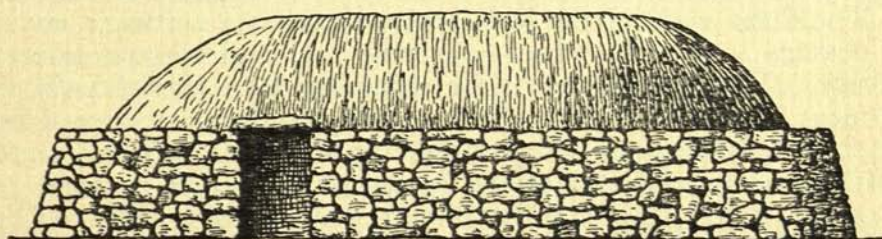
'Black houses' have as a rule a simple elongated plan, about 30 to 60 ft. long externally, by about 20 ft. wide. The walls, which stand about 6 ft. high, are usually double, being built of dry stone without mortar, the space between the double walls being filled with turf or small stones to render them weather proof (FIG. 1). The whole wall may be as much as 5 ft. thick at the base, often thinning to about $3\frac{1}{2}$ ft. thick at the top. In the older houses the corners are rounded externally, and the stones may be more or less undressed boulders; in more recent examples the corners are often square, and the stones are dressed to fit neatly together. The roof is supported by couples, made either of branches or of any procurable pieces of wood, and these rest on the *inner* facing of the double wall, so that it is usually possible to walk round the top of the wall outside the edge of the roof, there being no projecting eaves. The covering is of thatch, loosely laid on, and held in place by heather-ropes from which numbers of biggish stones are suspended all round the building to prevent the thatch being blown away by the wild winter winds. For the same reason there are no projecting eaves, as already mentioned, and the whole contour of the roof is a rounded ridge of hipped form, without gables, and without square



Plan



Section



Elevation

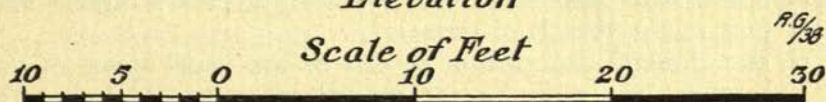
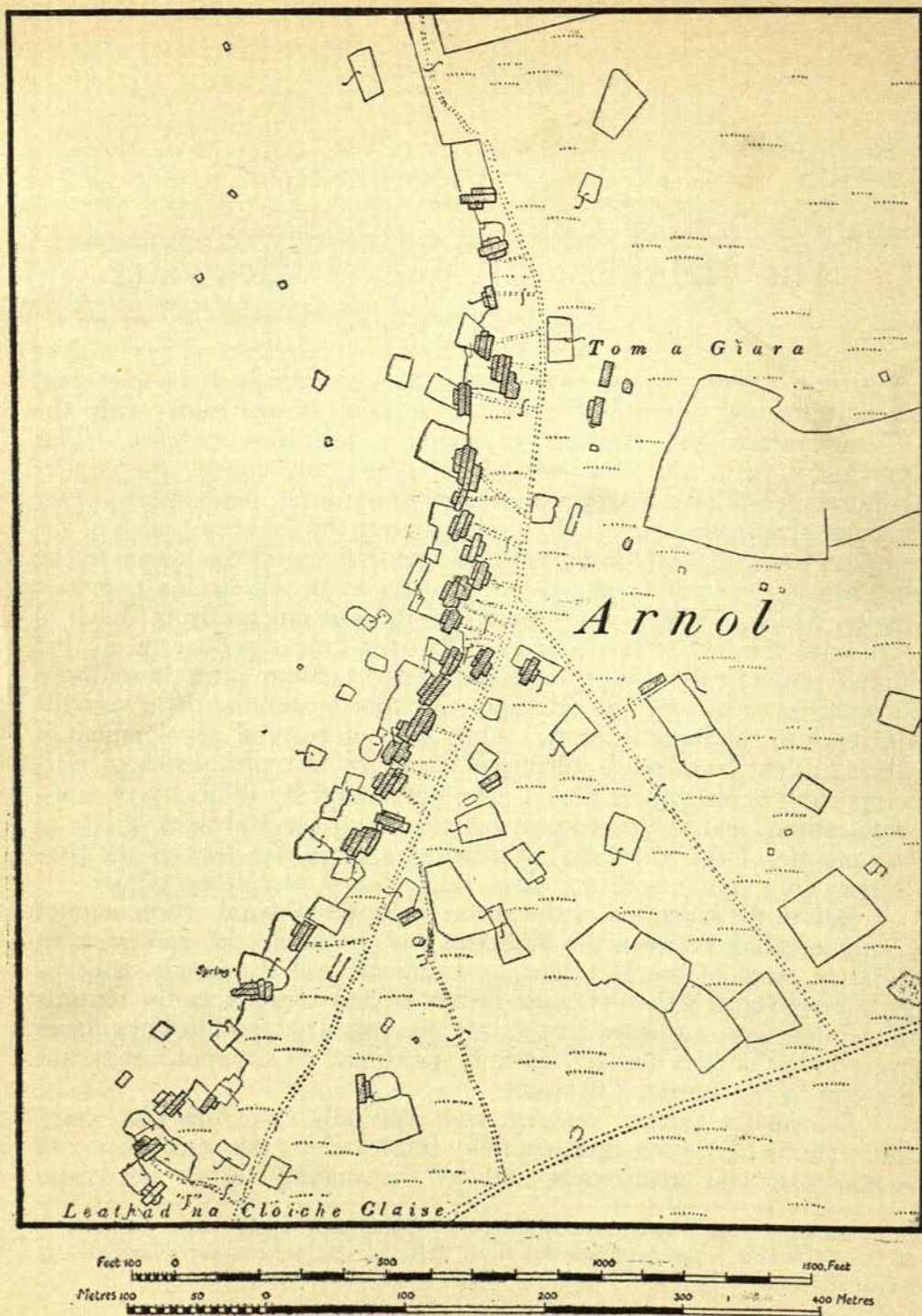
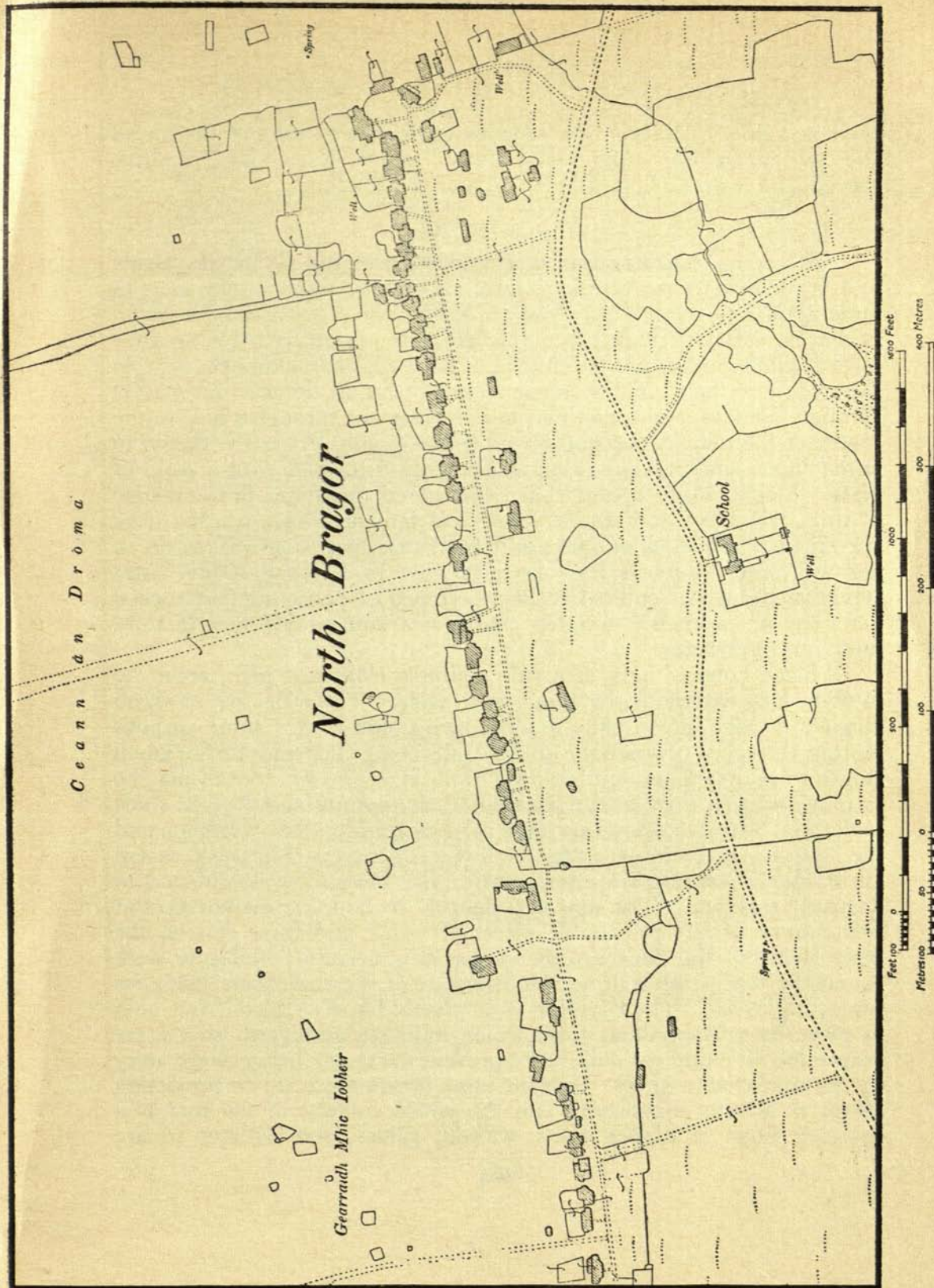


FIG. I. PLAN, SECTION AND ELEVATION OF TYPICAL 'BLACK HOUSE' e.g. IN SKYE



ARNOL: A TYPICAL VILLAGE OF 'BLACK HOUSES' IN WEST LEWIS (1897)
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NORTH BRAGOR : A TYPICAL VILLAGE OF 'BLACK HOUSES' IN WEST LEWIS (1897)
 Reproduced by permission of the Ordnance Survey and the Controller of H.M. Stationery Office

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edges. Nowadays heather-ropes tend to be replaced by fishing-nets or even by wire netting.

The interior of such a house is generally divided by rough wooden partitions into three apartments. At one end is the cow-byre into which the outer door leads ; this door, which stands the full height of the wall, and is generally provided with a thin flat stone for a lintel, is placed near the end of one of the long walls of the house. From the cow-byre one passes through a rough wooden partition into the living-room where one sees a peat fire burning in the middle of the clay floor, and a kettle hanging over it by a chain from the roof. It is an interesting point that the fire is never allowed to go out, summer or winter, day or night ; it is smooored over with peat-ash in the evening and keeps in sufficiently to be revived in the morning ; complete extinction would be extremely unlucky. Even in the ' black house ' which is preserved as a local museum by the Scottish National Trust at Callernish (Lewis) the fire is said not to have been allowed to go out for a hundred years. The peat-smoke, which, unlike wood-smoke, is not irritating to the eyes or lungs, finds its way out principally through the cow-byre and the outer door—and to a negligible extent through any hole which may have been left for it in the thatch of the roof. One of the results of this arrangement is that the rafters and thatch become coated with a sticky, sooty fur which was formerly valued as a manure for the fields and was carefully collected for this purpose whenever the thatch was renewed.

Round the walls of the living-room are chests, settles, a dresser, and perhaps a spinning-wheel—all rather old and elegant pieces of furniture. Through a door in the second partition lies the sleeping apartment, one side of which is occupied by two wooden-framed beds in cupboard-like recesses occupying the whole of one wall between the partition and the end-wall of the house. Each bed is perhaps 5 ft. wide and 5 or 6 ft. long, and they lie foot to foot, being separated by a wooden partition between the two bed-recesses. Each of the two inhabited apartments will nowadays be lit by a pane of glass let into the lower part of the thatch of the roof.

Such is a general description of one of the usual types of ' black house ', excluding the more recent modifications to which many have been subjected, and it is based largely on specimens visited by the writer in Skye in 1920 and 1934.² The occupants of these remarkably

² In the case of one house at Woodend, near Portree, the present occupant could account for its past occupants for 200 years. The house is obviously an old one and less carefully built than most, but has been recently modified internally.

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picturesque old houses—proud, reserved Gaels—are unfortunately exceedingly sensitive about what they consider to be evidence of their poverty, and they are intensely resentful of anything resembling curiosity on the part of a 'Sassenach'. It is therefore seldom possible to gain entry to a 'black house' without much diplomacy and the greatest tact; a personal introduction by another local inhabitant is nearly always necessary. The people are also very camera-shy, so that it was something of a triumph to be able to obtain a photograph of an interior with central fireplace in the village of Arnol in Lewis in 1937 (see PLATE V).

A more complex type of 'black house' is characteristic of the island of Lewis, particularly the west coast, where some of the best examples may be seen at Arnol (PLATE I); here they are still extremely common, though few can have escaped undergoing some modification since they were described by Capt. Thomas in 1867.³ The general type of construction is the same as that just described, but the house may consist of two, three, or even four⁴ long structures of unequal length, lying parallel to one another so that they share the intervening long walls in common, but each covered with a separate ridge roof (FIG. 2). The rain that falls in the trough between adjacent roofs percolates down through the thick wall upon which they rest, no attempt being made to carry the water off by guttering. After all, what matters damp in a dry-stone wall which has neither plaster nor paper to cover it within, and when the air is kept warm and dry by the ever-burning fire?

When the house consists of three parallel structures in this way, the central one is generally the longest, widest and highest, and forms the main chamber of the house, the other two forming a porch and a barn respectively. The porch accommodated a quern on a fixed table on one side of the entrance,⁵ and provided room for stalling a horse on the other side. The main chamber might be from 30 to 50 ft. long internally, and 12 to 14 ft. wide, and consisted in Capt. Thomas's time of two parts separated from one another only by a step and not by a

³ *Proc. Soc. Ant. Scot.*, 1870, VII, 153-60.

⁴ I have only seen one instance of a house consisting of as many as four parallel chambers; this is in the township of Fivepenny Borne, and is illustrated in a recent photo by Aage Roussell in his *Norse Building Customs in the Scottish Islands* (1934), 13, fig. 3 ('Mealahost').

⁵ For the arrangement of the quern see *ANTIQUITY*, 1937, XI, 144-5, fig. 39 and pl. III; Arthur Mitchell, *The Past in the Present* (1880), 33-8.

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partition of any kind. The larger part—about two-thirds of the whole—formed the cow-byre, while the smaller part formed the domestic quarters of the household and had a fire in the middle of the floor, as usual. As the long axis of these houses generally lies at right angles to the contours of the ground there may be a considerable fall in level between the upper and lower ends of the house. The byre is always at the lower end and anyone entering the house from the porch would have to pass through the byre to reach the domestic end, the floor of the latter being raised by a step about a foot above that of the byre. The animals would be tethered round the walls of the byre, and as the floor was cleared only once a year the accumulation of manure might in the course of the year raise it well above the level of the domestic end. And yet the approach to the latter lay of necessity through the byre, because it was better so than that the animals should be taken in and out through the 'living room'. The end-wall of the byre usually has a wide gap in it, about 6 or 7 ft. wide; this is kept blocked with a wall of turves which can be taken down for the annual cleaning of the byre floor.

Capt. Thomas thus describes the domestic end of such a house as he saw it in 1867:—

'Externally there is no smoke-hole nor window; but the purpose of both is served by two holes, about a foot square, in and at the bottom of the thatch . . . the custom arises from the desire to keep in the smoke until it fills and saturates the vault of the roof. . . . If the sun is shining brightly, these cottages appear on entering to be quite dark, until the eyes become accustomed to the dim light within. . . . The fire, which never goes out, is about the middle of the floor; on the right hand side is a bench of wood, stone or turf, on which the men sit; on the opposite side the women perform their domestic duties. Tables and chairs are almost unknown; but the evidently modern luxury of bedsteads and a dresser are quite usual. I am not sure of the date of their introduction; but they cannot have been long in use, from the former scarcity of wood, at least of planks. Behind the dresser is the calves' location, because it is near the fire; and the cows are tethered in winter along the wall. . . . A door opposite the entrance door admits to the barn, which is also commonly the sleeping-place of the grown-up young people'.⁶

Though Capt. Thomas says that in his day there was a prejudice against shutting the cows out from a view of the fire, it is doubtful whether this has survived the pressure of Ministry of Health regulations; consequently it is probable that all such houses have in more recent times been provided with wooden partitions between the byre and the domestic quarters.

⁶ *Proc. Soc. Ant. Scot.*, 1870, VII, 155-6.

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The *crùb*, or wall-bed, was becoming obsolete in Capt. Thomas's time, though he was acquainted with people who had used them. It consisted of a recess in the thickness of the wall, raised about 2 ft. above

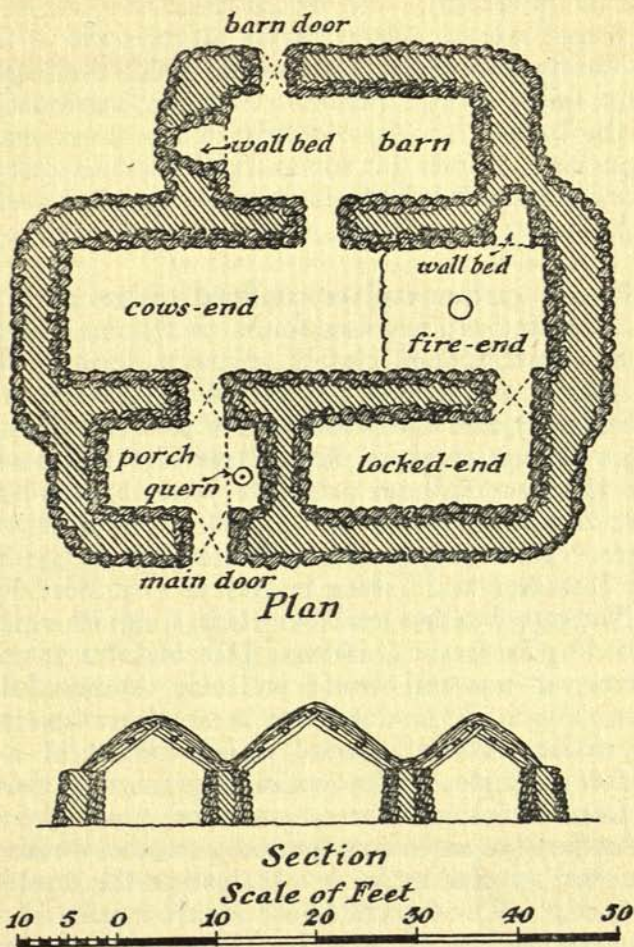


FIG. 2. PLAN AND SECTION OF A TYPICAL 'BLACK HOUSE' IN LEWIS
(Plan after Thomas)

floor level. At the mouth it might be $2\frac{1}{2}$ ft. wide and 3 ft. high, and it would extend into the wall to a depth of 5 or 6 ft., becoming narrower and lower as it went; it was roofed with flag-stones. The would-be sleeper introduced himself feet foremost into this recess, sometimes

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with the help of a rope hanging from above—no mean achievement, one would think—and lay with his head at the opening. In the oldest houses in Lewis, Capt. Thomas says, there was usually a *crúb* in the wall opposite to the hearth, 'and where there was one on each side of the fire, the house was considered to be well supplied. If there were more in the family than these beds would hold, they lay in a corner upon the floor, railed in by a plank on edge. Occasionally the second *crúb* was in the barn. . . . An old lady of my acquaintance, when a girl, was on a visit, where the servant girl used to carry her to her sleeping-place in the wall (which, in this instance, was at the cows' end of the house), that she might not soil her feet by walking among the cattle'.⁷

'Black houses' are nowadays confined to the more northerly of the Western Isles, and are not now found on the mainland. Those of Orkney and Shetland, though closely related to those of the Hebrides, show certain differences, such as a stricter rectangularity of plan (avoiding rounded corners), and the possession of gables and single walls.

Recently a Danish architect, Aage Roussell,⁸ has demonstrated the Scandinavian affinities of these primitive 'long houses' of which the typical feature is that the family occupies one end, while the other end forms the byre. This was the characteristic plan of the Scandinavian houses of the Iron Age and Viking period, as evidenced by very many examples in Norway, Sweden and Denmark, some of which have been amply described by Professor Gudmund Hatt in *ANTIQUITY*.⁹ Allowing for the difference of material—wood and clay—some of the houses of the Roman Iron Age in Jutland seem to be an almost exact counterpart to those Hebridean 'black houses' which consist of a single long building. Other examples are known in large numbers from southwest Norway and from Sweden. The recent discovery of the remains of a Viking house at Jarlshof in Orkney provides another striking parallel to the 'black houses', including such a feature as the double stone wall with earthen core.¹⁰ The type of house which consists of two or more parallel chambers, each with separate ridge-roofs, is found both in Lewis and in the Orkneys and Shetlands, and certain analogies are available from Iceland.¹¹

⁷ Ibid. 159.

⁸ Aage Roussell, *Norse Building Customs in the Scottish Isles* (London, 1934).

⁹ *ANTIQUITY*, 1937, XI, 162-73.

¹⁰ *Proc. Soc. Ant. Scot.*, 1935, LXIX, 265-88.

¹¹ *Proc. Soc. Ant. Scot.*, 1873, X, 156.

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To judge from the accounts of 18th century travellers, such as Pennant and Boswell in 1772-3, 'black houses' of some such form as those described above were still the normal dwellings throughout the Western Isles from Rum northwards.¹² Further south in Islay Pennant illustrates a somewhat similar dwelling with central hearth, but having windows and gables.¹³

In the remote island of St. Kilda the old 'black houses' were almost all replaced by a more modern type of cottage between 1829 and 1843. An entertaining description of the old houses is given by the Rev. Neil Mackenzie, who was minister of St. Kilda at that time.¹⁴ After describing the thatch and the use of the soot on it for manuring the barley, he says : 'The furniture consisted of an iron pot or two ; a chest or two ; a wooden dish called *buta* and another called *cuman* ; a straw vessel like a large flat-bottomed beehive called *loban* ; an iron lamp called *cruisgean* ; a quern, and a few old barrels, some of them hooped by a rope made of a kind of ground willow twisted. The cattle occupied the division next the door, and it was not cleaned out till spring. At the other end lived the family, and there all the ashes, dirty water, and still worse, was spread out over the floor, and covered from time to time with layers of dry peat dust. Before the time for removal for use in spring the mixture was often higher than the side walls, so that a visit to a sick parishioner was quite an adventure. Owing to the thickness of the wall the door of the house was at the end of a low tunnel. Before the door, and extending part of the way into the tunnel, was a hole into which was thrown all the birds not used for food, the refuse of the others, and such like abominations. As the doorway was not more than 5 ft. high, you had to make your way past this in a stooping position, till at the end of the tunnel you reached the door. If it was spring-time, on passing the door you had to climb up among the cattle, which got excited from the presence of a stranger, the barking of dogs, and the shouting of your friends above. Amidst great excitement you got helped along, and hoisted over the 'fallan' [*i.e.*, the low stone partition between byre and living quarters]. Now you had to creep along on hands and feet, as it was only near the centre of the house that you could even sit upright. In this way you arrived at the edge of the steep slope above the bed opening [*i.e.*, a *crùb*, or recess in the thickness of

¹² Thos. Pennant, *A Tour in Scotland* (3rd edn. 1774), II, 277 ; Boswell's *Journal of a Tour to the Hebrides* (Heinemann, 1936), 137-8.

¹³ Pennant, *op. cit.*, II, 229 and pls. xv, xvi.

¹⁴ *Proc. Soc. Ant. Scot.*, 1905, xxxix, 401-2.

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the wall], down which you went head foremost, nothing visible above but your legs, while you spoke and prayed with the sick'.

Martin, in his descriptions of the Western Isles and of St. Kilda in particular (in 1697), does not say much about 'black houses', because to him, a native of Skye, they were too ordinary to be worth more than a passing mention.¹⁵

Houses built of turf (*i.e.*, peat) are not common now, except as shielings, but they can be very stable and durable. Mr Crawford has photographed a fine example by Loch Eynort in South Uist, built in 1914 and showing the careful laying of the turves in herringbone fashion¹⁶ (PLATE III, 1). Houses of turf were more commonly met with on the mainland in the 18th century: Boswell describes one consisting of three rooms, lined with wattle, in Glen Moriston, and another consisting of byre, dwelling room and sleeping room near Loch Ness¹⁷; others mention oval turf houses—apparently not shielings—in Argyllshire,¹⁸ Lochaber,¹⁹ Sutherlandshire,²⁰ and even on Deeside, near Ballater.²¹ Turf shielings are still common in Lewis, as will be seen below.

The survival of 'black houses' to the present day in Lewis and elsewhere should not in any way be looked upon as a stigma upon their occupants. The latter are extremely sensitive about them, and envy those of their neighbours who, with the help of a Government loan, have built for themselves modern two-storey cottages. The social reformer rejoices at this change which is gradually but surely altering the face of the islands, and he comforts himself with the thought that in a few years 'black houses' will be no more. With social reform there will be universal sympathy, but one cannot help regretting the light-hearted way in which these ancient and picturesque dwellings, that so perfectly fit the wild landscape of the islands, are being eliminated in favour of houses that stand gaunt, stark and unsympathetic on the local sky-line. It is as when in England old thatched, timbered

¹⁵ M. Martin, *A Description of the Western Isles of Scotland*, apud Pinkerton's *Voyages and Travels*, 1809, III, 667.

¹⁶ For a knowledge of this, and for much other valuable information, Mr Crawford is indebted to Mrs Margaret Campbell, of Barra, whom he wishes to thank for her generous help.

¹⁷ *Boswell's Journal*, 99-101, 103.

¹⁸ *Proc. Soc. Ant. Scot.*, 1905, XXXIX, 508-9 (anonymous journal of 1791-2).

¹⁹ Pennant, *op. cit.*, I, 209.

²⁰ *Ibid.* II, 315.

²¹ *Ibid.* I, 117.

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cottages are replaced by red-brick Council-houses of the severest and most blatant pattern ; here an effective protest is generally made, but there not one voice seems to be raised in favour of those unique dwellings which within a very few years will have vanished for ever.

It is not that anyone wishes to perpetuate a standard of life in which human beings live herded with cattle, and without light or air. And yet from these despised ' black houses ' has issued as fine a race of men as ever came from any kind of house in England—men who have distinguished themselves in public life in Scotland and throughout the Empire. It is only since the comparatively recent introduction of tuberculosis to the islands by returning emigrants that the ' black houses ' have become unhealthy. In the 17th and 18th centuries centenarians appear to have been commoner on the islands than they are now, even attaining ages of 140 or more.²²

Is it too much to hope that, even if ' black houses ' cannot be modernized to satisfy the requirements of hygiene, some specimens may be preserved entire with their furniture, before it be too late ? One such is preserved at Callernish in Lewis by the Scottish National Trust, and this contains the nucleus of a folk-museum. This house is not, however, furnished as it was when it was occupied, except that the peat-fire has not been allowed to go out, it is said, for a hundred years. The place ought obviously to be fully furnished in the original manner, each exhibit being displayed in its natural setting, and several more such houses might well be so preserved in different parts.

SHIELINGS

Lewis is now the only part of Britain in which the villagers still repair to the moors with their cattle during the summer—between seed-time and harvest—and live an idyllic life in the shielings. This custom is still widely followed in Norway and Switzerland, and it was formerly observed on the mainland of Scotland, and in the north of England—as witness the numerous place-names incorporating the word ' shiel ' or ' shield '. We know from Boswell and Pennant that shielings were in use even as far east as Aberdeenshire round about 1770,²³ but of their character nothing is said.

A shieling (Gael. *gearraidh*, pronounced ' garry ' ; or *airidh*, pronounced ' ah-ry ', to rhyme with ' starry ') consists of a group of

²² Cf. Martin, 649 ; Pennant, II, 214.

²³ *Boswell's Journal*, 107 (Glen Moriston) ; Pennant, I, 108 (near Glen Tilt).

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more or less permanent huts, to which the same population return every summer. It may be situated in an extremely remote part of the moors, many miles from any kind of track, and all the furniture required has to be carried thither. Skene gives a vivid picture of the departure for the summer shieling.

'Having finished their tillage, the people go early in June to the hill-grazing with their flocks. This is a busy day in the town-land. . . . The different families bring their herds together and drive them away. The sheep lead, the cattle go next . . . and the horses follow. The men carry burdens of sticks, heather-ropes, spades, and other things needed to repair their summer huts. The women carry bedding, meal, dairy and cooking utensils. Round below their waists is a thick woollen cord or leathern strap, underneath which their skirts are drawn up to enable them to walk easily over the moors. . . . Women knit their stockings, sing their songs, talk and walk as free and erect as if there were no burdens on their backs. . . . When the grazing ground has been reached and the burdens are laid down, the huts are repaired outwardly and inwardly, the fires are rekindled, and food is prepared. . . . Having seen to their cattle . . . the people repair to their removing feast . . . the chief thing being a cheese. . . . Here they remain making butter and cheese till the corn is ripe for shearing, when they and their cattle return home'.²⁴

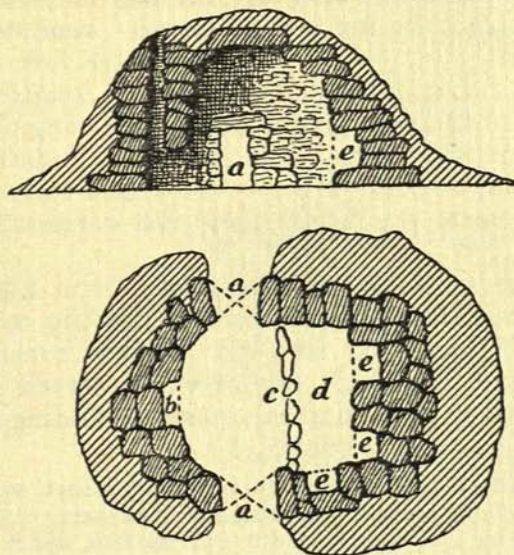
Once more we are indebted to Captain Thomas for the fullest information we possess regarding the shielings of last century in Lewis and Harris.²⁵ His observations were made in 1857-66, and his second-hand information went back to the beginning of that century. In his time the huts were either timber-roofed, with stone walls (*airidh*) or round 'beehive' huts, built and roofed entirely with dry stones on the principle of the corbelled arch, and covered externally with turf and grass. These latter were called *both*, plur. *bothan* (pronounced 'bo', 'bo-un'), a loan-word from the Norse, akin to our 'booth'. Thomas visited over forty specimens of these beehive huts, mainly in the parish of Uig in Lewis, about half of which number he found to be still inhabited as shielings. He says that they were valued by their occupants more than the timber-roofed structures, partly on account of the scarcity of timber, and its liability to be dislodged in winter gales. In most cases their origin went back beyond living memory; but an example on Cnoc Dubh, Ceann Thulabhig, near Garrynahine (one of the very few still traceable today; see PLATE III (2) and FIG. 3) was said to have been built by the grandfather of a man still living in 1866, *viz.*, probably about 1776. This one was still occupied in 1866.

²⁴ W. F. Skene, *Celtic Scotland* (1880), III, 385-8.

²⁵ *Proc. Soc. Ant. Scot.*, 1862, III, 127-44; 1870, VII, 161-4. See also Dr Arthur Mitchell, *The Past in the Present* (1880), 58-72; Skene, *Celtic Scotland* (1880), III, 387-8.

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In general these huts had dimensions somewhat as follows : diameter, external, 12-18 ft., internal 6-8 ft., height, external, 9 ft., internal, 6 ft. The chamber was usually round or oval, occasionally rectangular. They had either one or two doors, about $2\frac{1}{2}$ ft. high, and generally some small recesses or aumbreys in the wall for storing things.



a..doors. b..fireplace.

c..row of stones. d..bed. e..cupboards.

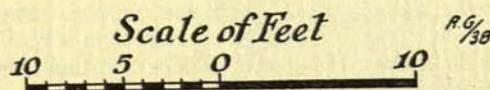


FIG. 3. PLAN AND SECTION OF BEEHIVE HUT,
Cnoc Dubh, Ceann Thulabhig
(After Thomas. Cf. PLATE III, 2)

Some had wall-beds (*crùb*) like the 'black houses', and all had a smoke-hole at the apex of the dome, except the one at Cnoc Dubh, which is furnished with a recessed fireplace and chimney in the wall (FIG. 3). The huts with only one door, and those with wall-beds, are probably the oldest; the practice of having two doors seemed to Thomas to be a more recent device by which one or other door could be blocked

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with turves, according to the direction of the wind, thus better controlling the draught for the fire and thereby the elimination of smoke. When there are two doors they are opposite one another, but a line joining them divides the interior of the hut into two unequal parts; the smaller contained the peat fire on the floor, while the larger was filled with hay or rushes to serve as a bed for two or even three persons. Between this bed and the fire was a 'bench' consisting of a row of stones covered with turf placed right across the hut, and on this the occupants could sit during the day (FIG. 3). A longish stone could be drawn in and out of the wall for the purpose of hanging a pot over the fire. The furniture did not as a rule exceed the following: a blanket, an iron pot, a basin, a spoon, a bag of meal, and some utensils for the milk; not many years previously these last consisted of hand-made pottery vessels.

Some of these beehive huts stood singly, or in a group, like those at Fidigidh Iochdrach in a remote part of the Uig mountains, which Thomas found still occupied in 1858. Others consisted of two or more interconnecting chambers, one of which served as a dairy. Dr Mitchell's²⁶ description of his first experience of finding such a structure inhabited (in 1866) is worth quoting:

'We found one of these beehive houses [near Kinloch Resort] actually tenanted, and the family happened to be at home. It consisted of three young women. . . . None of them could speak English. . . . they invited us into the *bo'h*, and hospitably treated us to milk. . . . I do not think I ever came upon a scene which more surprised me. . . . By the side of a burn which flowed through a little grassy glen. . . . we saw two small round hive-like hillocks, not much higher than a man, joined together, and covered with grass and weeds. Out of the top of one of them a column of smoke slowly rose, and at its base there was a hole about three feet high and two feet wide, which seemed to lead into the interior of the hillock. . . . There was no one, however, actually in the *bo'h*, the three girls, when we came in sight, being seated on a knoll by the burn-side, but it was really in the inside of these two green hillocks that they slept, and cooked their food, and carried on their work. . . .'

Another group of three conjoined and intercommunicating huts of this type, situated at Bairn-Gail, near Morsgail (Lewis), was inhabited up to a short while before 1885 (FIG. 4).²⁷ These (to judge from the model preserved in the Pitt Rivers Museum at Farnham, Dorset) were provided with horn-like projections to shelter the entrances from the wind.

Capt. Thomas also described the ruins of several other such huts and hut-complexes on the northern shore of Loch Resort, near the

²⁶ A. Mitchell, *op. cit.*, 58-9.

²⁷ Skene, *op. cit.*, III, 388, states that beehive huts were still inhabited in 1880.

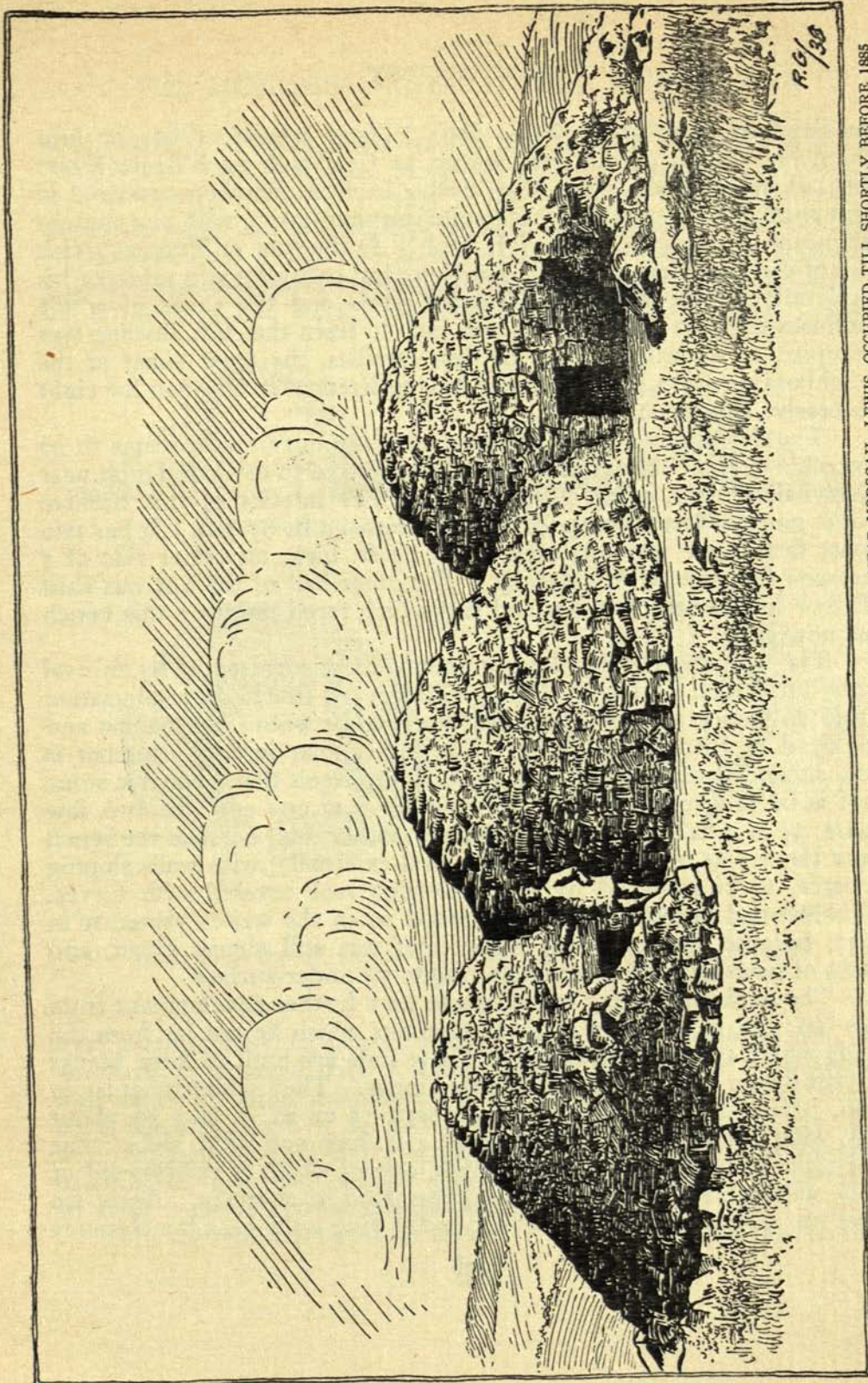


FIG. 4. SKETCH OF MODEL OF GROUP OF THREE BEEHIVE SHIELING-HUTS AT BAWN-GAIL, NEAR MORSGAIL, LEWIS, OCCUPIED TILL SHORTLY BEFORE 1885
(Model in Pitt Rivers Museum, Farnham, Dorset)

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headland of Aird Mhor (FIGS. 6-9). These consist of two or four chambers apiece, except one, known as Gearraidh na h'Airde Moire (FIG. 9), which had no less than twelve beehive chambers arranged in four suites, the members of each suite communicating with one another by means of passages about $2\frac{1}{2}$ ft. high. At the time of Thomas's visit two of the chambers were still complete, but collapsed as a result of his explorations. He found nothing but ashes and the shells of edible molluscs in great quantity, but was able to learn that this shieling was occupied as recently as 1823 by four families, the then tenant of the neighbouring farm of Aird Bheag having lived in it as a boy for eight successive summers.

The development of the modern shieling hut (*airidh*) seems to be traceable to the chimneyed *both* already referred to at Cnoc Dubh near Garrynahine (FIG. 3 and PLATE III, 2). The interior of this beehive hut is more or less rectangular, and measures 8 ft. by 7 ft. It has two doors facing one another, each about $2\frac{1}{2}$ ft. high, on either side of a recessed fireplace, with chimney. The other half of the hut was shut off by a low bench of stones and turf which faced the fire; this bench has now gone.

The next stage of development seems to be represented by an oval stone hut called Airidh a' Chnoic Ghuirm (no imitated pronunciation could do justice to this name), near the road between Garrynahine and the head of Little Loch Roag. The rectangular interior chamber is here expanded to about 12 ft. long, with the result that a beehive stone roof is no longer possible. The fireplace is at one end, the two low doors, $3\frac{1}{2}$ to 4 ft. high, face each other on either side of it, and the bench faces the fire as before. The hut is oval externally, with walls sloping inwards, to be crowned by a low wooden roof covered with turves. This hut had not long been abandoned when the writer visited it in 1937, because the somewhat flimsy roof was still almost intact, and flakes of newspaper were still adhering to its under-surface.

The modern shieling hut seems to be a further development from this last, and is best seen in those shielings which lie not far from the roads which traverse the island. These huts are built of large blocks of peat owing to the scarcity of loose stones. They are rectangular in plan, having internal dimensions perhaps 15 or 20 ft. long by about 9 ft. wide. The long walls are about 4 ft. high and $2\frac{1}{2}$ ft. thick; the end walls form gables, 7 or 8 ft. high, one of which is constructed of stone and contains a fireplace and some kind of chimney. Again we have two doors, facing one another, in the long walls near the chimney

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end, and one of them is always blocked with turf, according to the direction of the wind, both being so blocked at night. The modern way of dealing with the roofing problem, which has always been a dominant factor in the past, is practical if unromantic. The proximity of these shielings to the road makes it possible for a quantity of miscellaneous furniture, including the roof, to be brought out to the shieling by motor-lorry, and taken away again at the end of the season. Such a

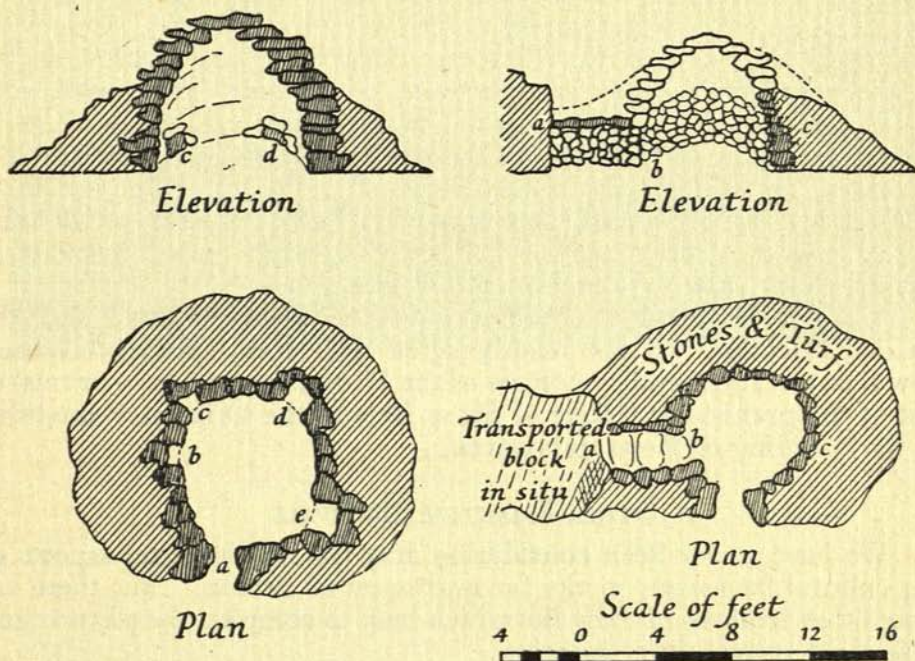


FIG. 5. PLANS AND SECTIONS OF TWO BEEHIVE HUTS NEAR L. MEAVAIG, HARRIS
(After Thomas)

roof is constructed of planks, boards and bits of corrugated iron, the whole being covered with a tarpaulin, and lined inside with flowery wall-paper, or even newspaper. The papering may also extend to cover the inner faces of the turf walls. The interior is made cosy with iron bedsteads, feather-beds, cupboards, dressers, chairs, and hangings of all kinds, and even in these degenerate days no visitor is allowed to go away without at least a large glass of creamy milk.

The turf walls are so solid that they neither yield nor quiver when

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pushed, and the hut, when unroofed, keeps in good repair throughout the long and stormy winter.

Beehive huts have for some time been disused as shielings, but, on the authority of Skene,²⁸ they were still inhabited as lately as 1880. They constitute a remarkable survival of a form of dry stone construction—corbelled vaulting—that was introduced to western Europe by the megalith-builders, and has survived throughout prehistoric times in those western regions which were most affected by them. Thus we find them in Ireland in connexion with early monastic foundations, in Orkney in such prehistoric villages as Skara Brae and Jarlshof, in the brochs, souterraines and 'earth-houses' of the north and west coasts, and in such Iron Age sites in Cornwall as Chysauster and Bosporthennis. Recent examples of this type of construction have been noted in the Hebrides, particularly in Lewis, Harris and the St. Kilda group²⁹; in Anglesey and Holyhead, in Cornwall at Fernacre Farm on Bodmin Moor, and in various parts of France—notably near Clermont in Puy-de-Dôme, and in Vaucluse and Basses-Alpes.³⁰

Taking the combined picture of the 'black houses' and the beehive shielings, we can readily agree with Prof. Gordon Childe's view that the 19th century culture of the Hebrides was but a survival of that of the prehistoric village of Skara Brae in the Orkneys,³¹ modified by the blending of Norse influences.

OTHER PRIMITIVE SURVIVALS

We have so far been considering only the architectural aspects of this cultural backwater in the far northwest of Britain. But there are many other features of daily life which help to complete the picture, and these must receive brief mention.

(1) HAND-MADE POTTERY. The first and most significant is the survival of hand-made pottery in Lewis down to about the end of last century. Before the dawn of the 'Enamel Age' comparatively little Staffordshire earthenware and crockery found its way as far as the wild

²⁸ Skene, *op. cit.*, III, 388.

²⁹ Martin (late 17th cent.) says that he saw over 500 small huts of this type in St. Kilda, and about 40 in the neighbouring Borera, used for drying fish and preserving birds'-eggs (*Voyage to St. Kilda, apud* Pinkerton's *Voyages and Travels*, III, 708, 721).

³⁰ Pierre Fournier, 'Les ouvrages de pierre sèche des cultivateurs d'Auvergne', *L'Auvergne littéraire*, 1933, no. 68; also *Bull. de la Soc. préhist. franç.*, 1921, XVIII, 338-57.

³¹ V. Gordon Childe, *Skara Brae* (1931), 182-4.

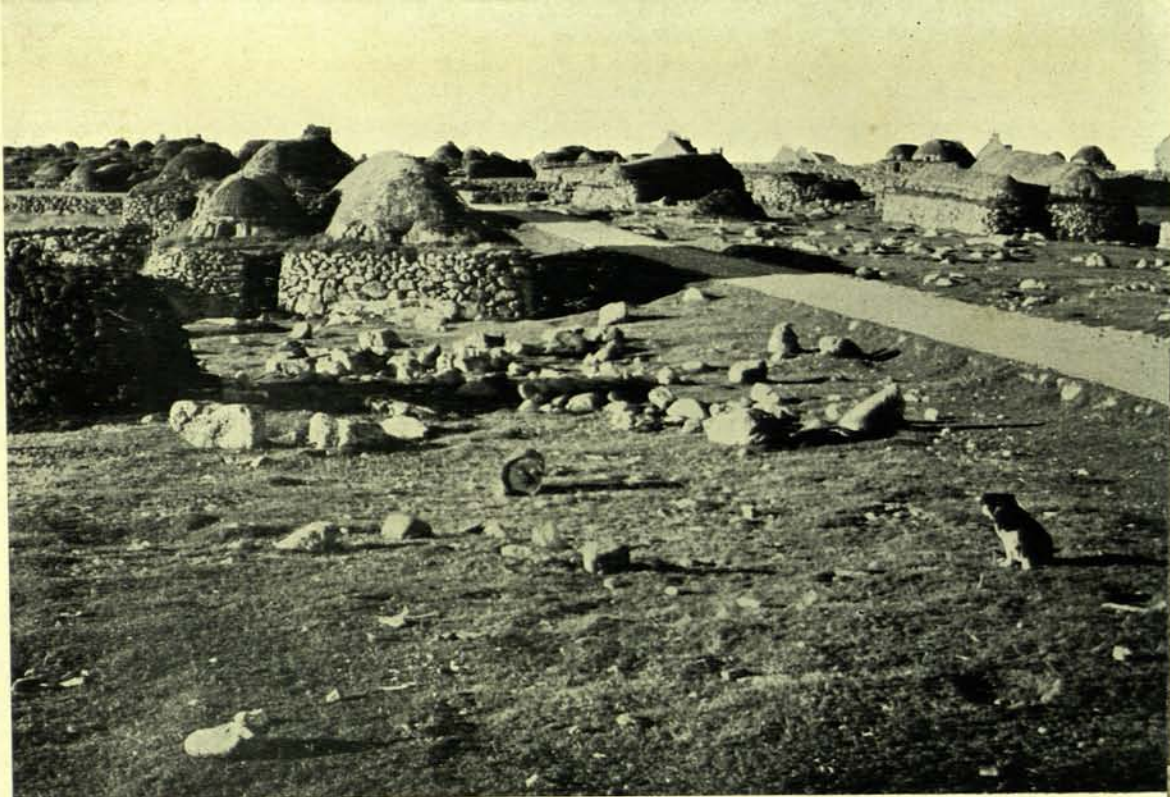


PLATE I

Above: THE VILLAGE OF ARNOL IN LEWIS

Several of these 'black houses' must have been built since the map of 1897 (p. 262) was published

Below: OLD AND NEW HOUSES IN ARNOL, LEWIS

ph. E. Cecil Curwen, 1937



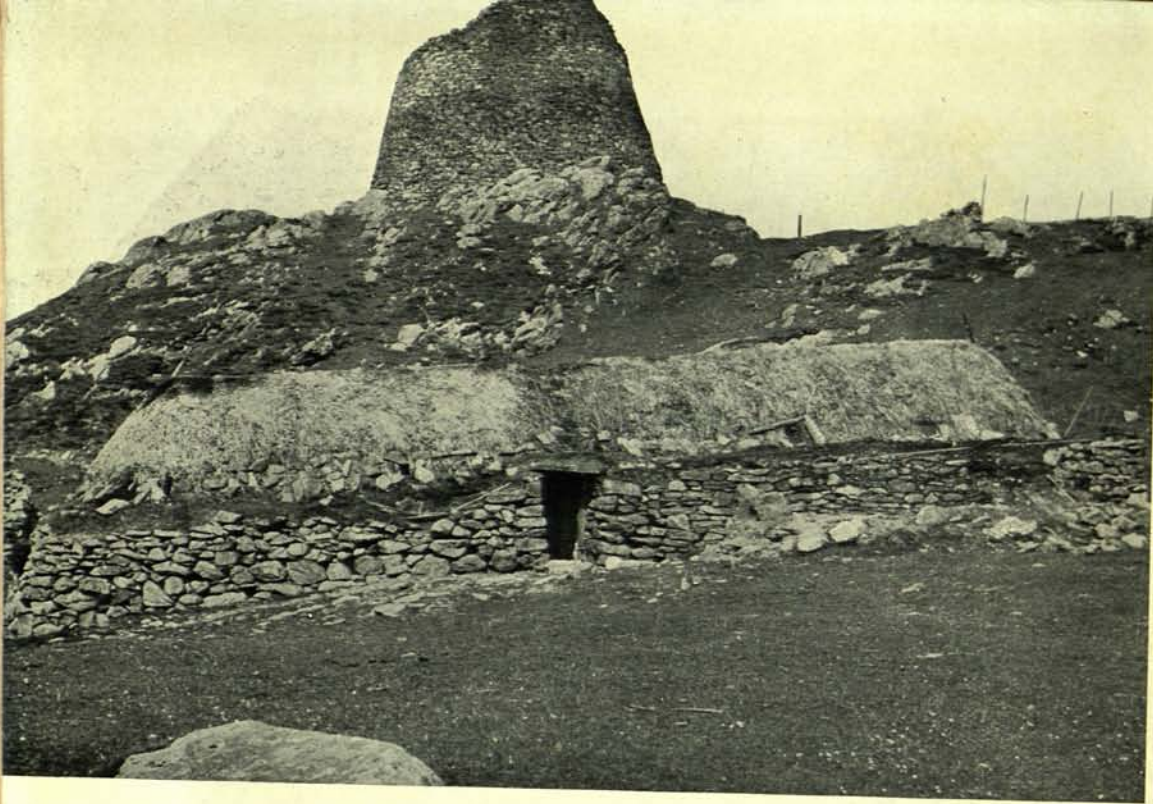


PLATE II

Above: DUN CARLOWAY, LEWIS: BROCH WITH INHABITED 'BLACK HOUSE' IN FOREGROUND

Below: 'BLACK HOUSE' AT BRAGOR, LEWIS
ph. O. G. S. Crawford, 1936





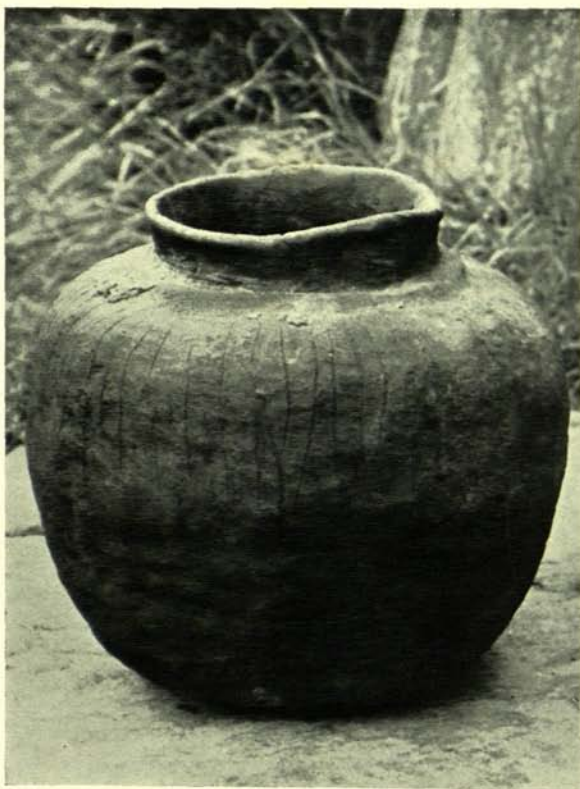
PLATE III

Above: 'BLACK HOUSE' BUILT OF PEAT, L. EYNORT, S. UIST. *ph.* O. G. S. Crawford, 1936

Below: BEEHIVE SHIELING, CNOC DUBH, LEWIS, (cf. Fig. 3), INHABITED IN 1866. *ph.* E. Cecil Curwen, 1937



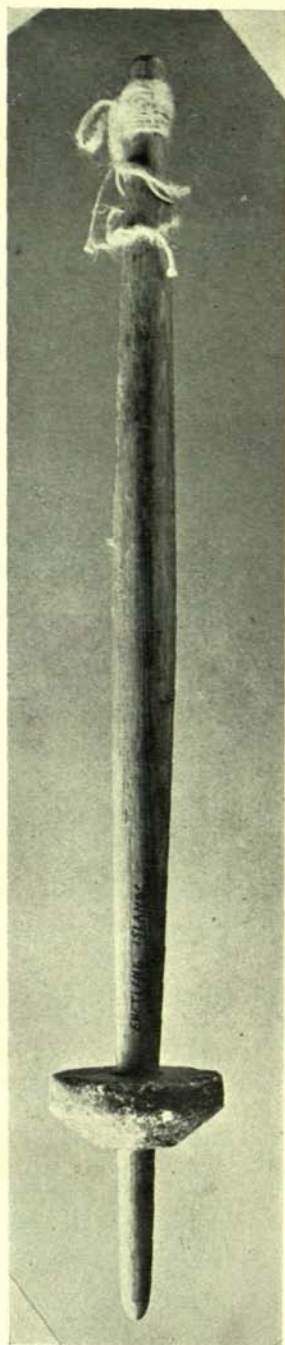
PLATE IV



1



2



3

1. HAND-MADE 'CRAGGAN', LEWIS, PROBABLY MID-NINETEENTH CENTURY
Note vertical stroked decoration. (Height about 9 inches)
2. HAND-MADE LEWIS POTTERY SHOWING 'STAFFORDSHIRE INFLUENCE'
3. MODERN SPINDLE AND WHORL FROM SHETLAND (length 10 inches)

ph. E. Cecil Curwen

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west coast of Lewis, with the result that the people there continued to depend very largely on making their own pots by hand on the domestic hearth in the true 'prehistoric' tradition, and without the use of a potter's wheel. These vessels were last made at Barvas in Lewis, and the writer met a middle-aged woman at Uig (Skye) in 1920, who in her younger days used to make these 'craggans', as they are called, in Barvas (PLATE IV, 1). In 1697 Martin remarked on the fine red clay in Lewis, and on the pottery made from it by local women for boiling meat or preserving ale; he also says that in the island of Tiree ale was

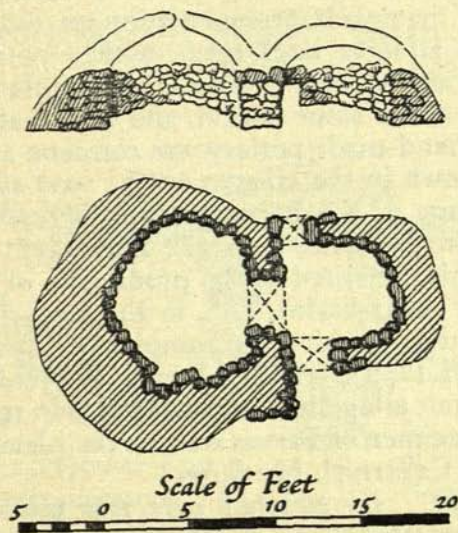


FIG. 6. PLAN AND SECTION OF BEEHIVE HUT NEAR AIRD MHOR, LEWIS
(After Thomas)

preserved in large earthen vessels, and its quality improved by plunging into it red-hot stones.³² But the fullest description we have is that of Dr Arthur Mitchell, who in 1863 found a stone-breaker sitting at the roadside not far from Barvas, and eating his dinner out of a little hand-made pot closely resembling a Saxon cinerary urn.³³ He was able to study the manufacture of these vessels, and has left us the following description of this piece of 'woman's work':

³² Martin, *loc. cit.* 575, 660.

³³ Mitchell, *op. cit.* 25-32, 45-7, 236-7.

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'The clay she used underwent no careful or special preparation. She chose the best she could get, and picked out of it the larger stones, leaving the sand and the finer gravel which it contained. With her hands alone she gave to the clay its desired shape. She had no aid from anything of the nature of a potter's wheel. In making the smaller craggans, with narrow necks, she used a stick with a curve on it to give form to the inside. All that her fingers could reach was done with them. Having shaped the craggan, she let it stand for a day to dry, then took it to the fire in the centre of the floor of her hut, filled it with burning peats, and built burning peats all round it. When sufficiently baked, she withdrew it from the fire, emptied the ashes out, and then poured slowly into it and over it about a pint of milk, in order to make it less porous'.

Dr Mitchell adds that in Lewis these vessels were usually unornamented, but that such ornamentation as did occasionally occur was composed of straight lines made with a pointed stick, cord, or thumb-nail. He also quotes a similar description of the making of craggans in Tiree at the same period, and says that as late as the early 19th century this hand-made pottery was common all over the Hebrides and was not unknown in the villages on the west side of the mainland.

A quaint feature of the Barvas pottery is that it latterly began to 'show Staffordshire influence'—if one may adapt a phrase from the prehistorians. This consisted in the production of crude imitations of tea-pots, tea-cups, sugar-basins, etc., in the local unglazed fabric, and it was a feature which heralded the complete extinction of this remarkable survival (PLATE IV, 2). With a branch of Woolworth's established in Stornoway it is not altogether surprising that in 1937 the writer failed to trace a single specimen of Barvas ware in the island—apart from what was already in the Callernish Museum.

(2) POT-BOILERS. Dr Mitchell even saw water boiled in pots by dropping in a heated stone, one or two stones being kept constantly in the fire for this purpose. The stones, which weighed from two to five pounds, soon cracked and fell to pieces, and frequently needed to be replaced.³⁴

(3) SPINDLE AND WHORL. Spindle-whorls—small perforated balls or discs of clay or stone—are found in nearly every excavation of a prehistoric dwelling-site, but their use in spinning did not finally die out till about the year 1900 in the more remote parts of Scotland. The whorl fitted on to the lower part of the tapering wooden spindle in order to give it momentum in spinning, and this formed the most primitive

³⁴ Mitchell, *op. cit.* 121-2. (The sand-dunes of Glenluce are thickly strewn with cracked and broken pebbles, which can only have got there by human agency. The adjacent 'floors' contain fragments of beaker pottery, thus suggesting that the practice here described endured for perhaps three millennia.—O.G.S.C.).

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device for the purpose (PLATE IV, 3). It is widely distributed throughout the world, and has been used from the earliest times down to the present. Pennant records that in 1769 he found that about £1600 worth of yarn was annually sold out of Breadalbane, most of it being spun 'with rocks', *i.e.*, with distaff and spindle, and he adds : 'Their Lord gives among them annually a great number of spinning-wheels, which will soon cause the disuse of the rock'. One great advantage of

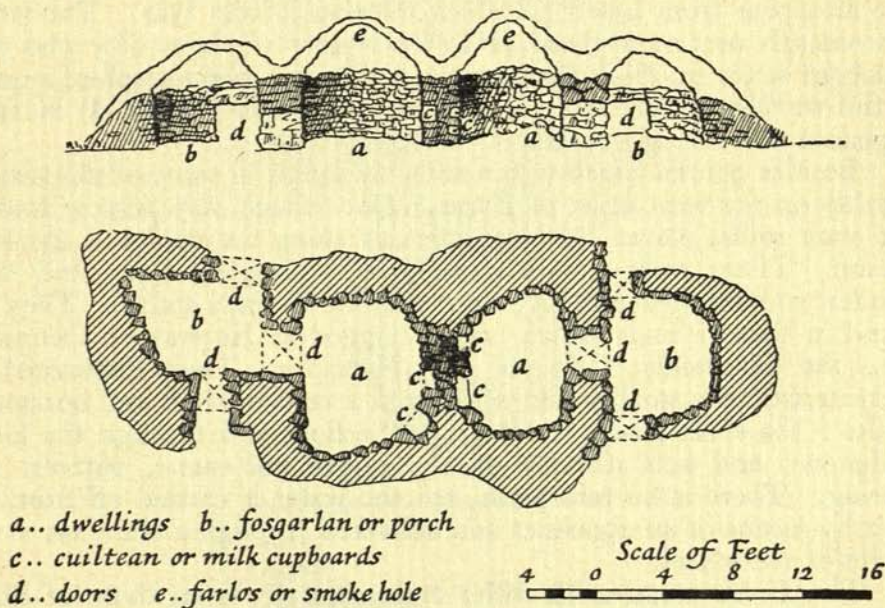


FIG. 7. PLAN AND SECTION OF GROUP OF BEEHIVE HUTS NEAR AIRD MHOR, LEWIS
 (After Thomas)

'the rock' was that it could be used by the women while they tended their cattle on the hills.³⁵ By about 1864-6 Dr Mitchell records that he had observed the spindle and whorl in use in many of the more remote parts of Scotland besides the Hebrides, Orkney and Shetland—namely in the counties of Ross, Sutherland, and Inverness, and the district of Galloway,³⁶ and in 1880 it was still in common use among the

³⁵ Pennant, *op. cit.* I, 92-3.

³⁶ Mitchell, *op. cit.* 1-9.

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herring fishers of the west coast of Scotland.³⁷ Today it is the spinning-wheel which is used, but even this is suffering from the effects of machine production and distribution.

The whorl itself was sometimes replaced by a potato, or by an expanded end on the wooden spindle. Consequently the absence of a whorl of clay or stone does not necessarily imply that no spindle was used.

(4) QUERNS AND WATER-MILLS. Querns, or hand-mills, remained in common use in the Hebrides down to quite recent times, and did not disappear from Lewis till about the time of the War. The writer has recently met more than one Lewis woman of about fifty who used to labour at the quern in her younger days, and a photograph of a quern in full working order, taken in a cottage in Foula (Shetland) in 1902, appeared in a recent number of *ANTIQUITY*.³⁸

Besides querns, small water-mills are found in some of the islands, notably on the west coast of Lewis. One village may possess four or five such mills, placed at short intervals along the banks of the local stream. These mills are of distinctive Norwegian type, and their wooden counterparts are very numerous in Norway today. They are found in those islands which once belonged to Norway or Denmark, *viz.*, the Shetlands, Orkneys and Hebrides. Their distinguishing characteristic is a small water-wheel with a vertical shaft and horizontal blades; the shaft passes up through the floor and through the lower mill-stone, and acts directly on the upper mill-stone, without any gearing. There is no mill-pond, but the water is carried off from the river by means of an aqueduct and delivered through a chute on to the blades of the wheel.

The Lewis water-mills differ architecturally from those of Shetland,³⁹ in that they are constructed like the 'black houses'; they are small oval buildings built across the aqueduct, with sloping walls of dry stones, and a low, rounded thatched or turfed roof. The last of such mills to work in Lewis is at Shawbost on the west coast, and it is the only one that still retains most of its roof and its wooden parts in easily restorable condition (1937). It would be a shame if such a unique building were allowed to decay unheeded; can no one be found to restore and preserve this sole surviving specimen before it be too late?

³⁷ *Proc. Soc. Ant. Scot.*, 1880, xv, 148-51.

³⁸ *ANTIQUITY*, 1937, xi, pl. III, f. p. 136, and fig. 39. For a general account of Scottish querns in the late 19th century see Mitchell, *op. cit.* 33-8.

³⁹ For an account of similar mills in Shetland see Mitchell, *op. cit.* 39-43.

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(5) AGRICULTURE. The run-rig system of agriculture—a form of open-field cultivation—was practised throughout the islands, as in most other parts, until a comparatively recent period. The chief crops are oats, barley and potatoes. Though the plough was known in the Hebrides in the 17th century—for Martin describes its use in North Uist⁴⁰—it was little used on account of the nature of the ground, which

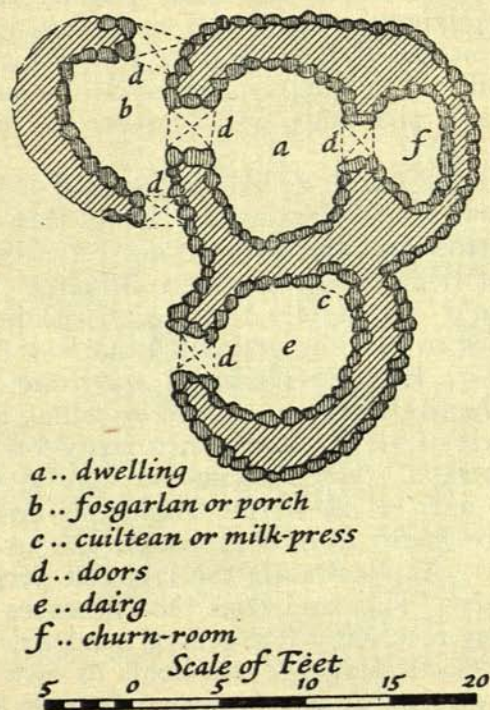


FIG. 8. PLAN OF BEEHIVE HUT GROUP NEAR AIRD MHOR, LEWIS
 (After Thomas)

is hilly, rocky and boggy. The cultivations took the form of mounded-up ridges, from 5 to 10 ft. wide, and from 20 ft. to 100 yds. or more in length, the longer ridges curving and forking irregularly. The purpose of the ridging was partly to promote drainage, and partly to facilitate manuring with sea-weed, for the soil dug from the ditches was piled up on top of the sea-weed to form the ridges. For this purpose the

⁴⁰ Martin, *loc. cit.* 592.

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caschrom, or foot-plough, an improved form of digging-stick, was in general use throughout the western Highlands and Islands at the end of the 18th century,⁴¹ and is still occasionally seen in Skye.⁴² Of late years it has been superseded by the gardening fork, but it is still a curious sight to see in Lewis, for instance, little patches of oats, perhaps no more than 10 or 15 ft. in length and breadth. These ridges are by some curious perversity called 'lazy-beds' (Gaelic *feannag*).

Harrows were drawn by hand, and were like large wooden rakes, with one or two rows of teeth and a third row of pieces of heather to smooth out the soil.⁴³ This implement recalls the large wooden rakes found in the Danish peat-bogs, and suggests yet another link with Scandinavia.⁴⁴

Reaping is still done with a sickle in Lewis, but in some parts the crop was simply pulled up by the roots. It was then dried in 'kilns', which in their form recall the corn-drying furnaces found in some Romano-British settlements in southern Britain.⁴⁵ After drying it might be 'graddan'd' by rapidly burning off the husks and beating the ears with a stick so that the grains fell out in a roasted but not a charred condition—a kind of combined threshing and 'parching' operation.⁴⁶ In Shetland corn was roasted by rolling hot stones among it as late as Mitchell's time.⁴⁷ It was then ready for the quern.⁴⁸

(6) MISCELLANEOUS. There seems no end to the survivals of primitive customs and beliefs in the Highlands and Islands, about which much can be learnt from such books, among others, as those cited in this paper. As illustrating the retarded permeability of this part of Sir Cyril Fox's 'Highland Zone' to influences from the 'Lowland Zone', we may mention a few general tendencies. In the more remote islands the Gaelic language still holds its own against English, which is regarded very much as a foreign tongue, in spite of its compulsory study in schools; in the villages children of pre-school age and

⁴¹ *Stat. Acc. Scotland*, 1793, VI, 288-9; Pennant, II, 288; Boswell, 282.

⁴² ANTIQUITY, 1927, I, pl. I, f. p. 261; 1932, VI, 404-5.

⁴³ Martin, *loc. cit.* 575, 705; Pennant, II, 288.

⁴⁴ ANTIQUITY, 1938, XII, 147.

⁴⁵ Aage Roussell, *op. cit.* 48, 60-2; *Antiq. Journ.* 1933, XIII, 121-5. See also note at end of this article.

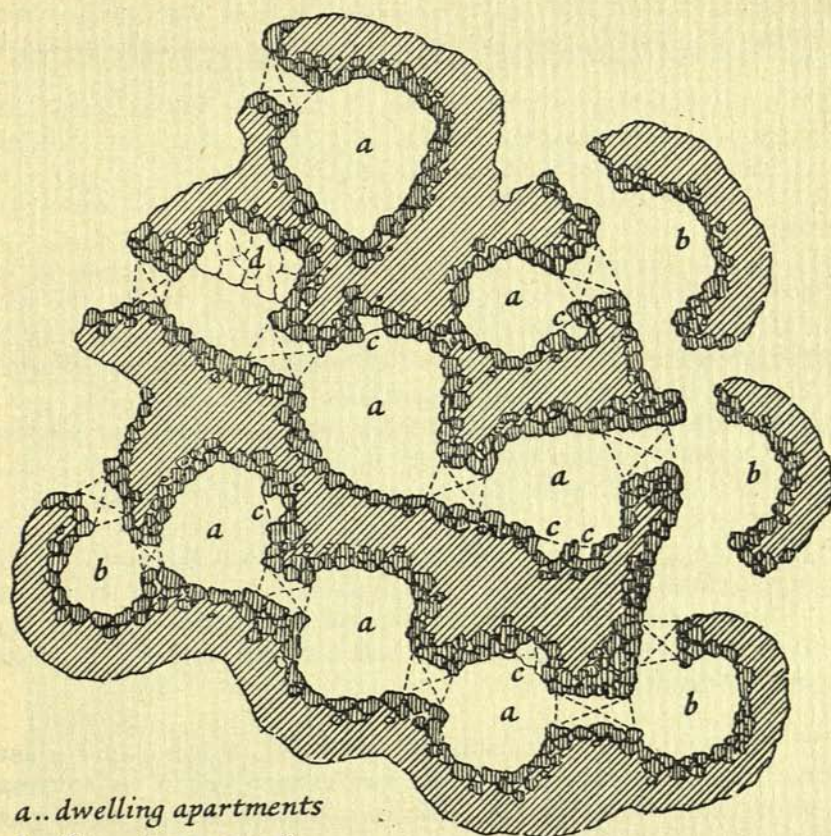
⁴⁶ Described by Martin, *loc. cit.* 639; Pennant, II, 280-1.

⁴⁷ Mitchell, *op. cit.* 46.

⁴⁸ For the effects of drying and roasting before grinding see ANTIQUITY, 1938, XII, 151-2.

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the older folk, especially the women have no English at all. Then there was the late survival of the tribal system of government down to the



- a..dwelling apartments*
- b..fosgarlan or porch*
- c..cuiltean or milk cupboards*
- d..stone bench or bed-place*

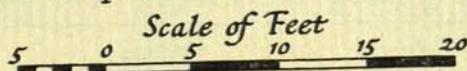


FIG. 9. PLAN OF COMPLEX GROUP OF BEEHIVE HUTS, BOTHAN GEARRAIDH NA H'AIKDE MOIRE
(After Thomas)

break-up of the Clans in 1746, together with the persistence of a distinctive form of dress and primitive weapons ; the broadsword and target were normal at Culloden in 1746, and as late as 1665 an army of

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Camerons and Macgregors included 300 archers in their preparations to resist an attack by the Macintoshes and Macphersons.⁴⁹ Martin also says that in 1697 the people of Lewis were dexterous at archery.⁵⁰ Furthermore, in addition to a wealth of highly significant superstitions and folk-lore there have not been lacking occasional instances of frankly pagan practices such as sacrifices and libations to Celtic deities as late as the 17th century—practises which the Church had some difficulty in stamping out. One may instance the annual libation of ale to a sea-god Shony at Eoropie in Lewis, with a view to gaining more sea-weed for manuring the fields—a curious fertility rite which was not discontinued till 1665⁵¹; also the sacrifice of a bull annually to 'Mourie his devilans' in an island in Loch Maree as late as 1678⁵²; and, finally, the placing of a female fertility figure on the wall of the 16th century tower of Rodil Church (Harris) in circumstances which indicate beyond all reasonable doubt that the figure is contemporary with its setting.⁵³

Among individual points of interest one may instance the use of short oval coracles on the river Spey in 1769, covered with hide, and only 4 ft. long by 3 ft. wide, managed by a one-handed paddle⁵⁴; and a curious case of trephining of the living human skull, mentioned by Martin,⁵⁵ who states that an illiterate empiric, Neil Beaton, established a great reputation for himself as a physician in Skye in the 17th century, and that to cure a severe headache 'he had the boldness to cut a piece out of a woman's skull broader than half a crown, and by this restored her to perfect health'.

The observations and information set forth in this paper illustrate the extraordinary culture-lag which has existed, even in so small a region as Britain, between the Lowland Zone and the more remote parts of the Highland Zone, due partly to the difficulty of communications, and partly to an inherent conservatism. If we had visited Lewis even fifty years ago, we should have been able to study the life and manners of a Celtic-speaking race emerging from roughly the same state

⁴⁹ Pennant, I, 191, 362.

⁵⁰ Martin, *loc. cit.* 579.

⁵¹ Ibid. 583-4.

⁵² Mitchell, *op. cit.* 271-4. This book contains a great deal of further information on kindred topics.

⁵³ *Anc. Mon. Comm. Inventory, Outer Hebrides*, Rodil Church, Harris.

⁵⁴ Pennant, I, 270.

⁵⁵ Martin, *loc. cit.* 637.

PLATE V



INTERIOR OF 'BLACK HOUSE', ARNOL, SHOWING CENTRAL FIREPLACE (see pp. 266-7)
ph. E. Cecil Curwen, 1937

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of culture as the Celtic people of the pre-Roman Iron Age in Wessex. Today this culture-lag is being eliminated by the uniformity which results from air-travel, radio and the Ministries of Health and Agriculture—unifying forces which were unknown of old.

The writer wishes to express his indebtedness to Mr Crawford for placing at his disposal the data he had collected on this subject, and also the photographs he had taken in the Outer Hebrides.

NOTE by O.G.S.C.

The use of kilns for corn-drying goes back, in the west, at least to the 6th century. The kiln was called in Latin *canaba*; there was one at Iona (Reeves, *Adamnan*, 1857, 88). Its use is described in the Life of St. Cainnech as being 'ad spicas siccandas et trituras'; and it is stated there that the members of his *familia*, not having a *canaba*, were obliged to thresh their corn 'super nudum pavementum in campo'. In the Life of St. Ciaran is mentioned a 'rota de virgis contexta plena spicis igni supposita, ut siccarentur ad trituras secundum morem occidentalium, id est, Britanniae et Hyberniae'. Both these saints were Irish contemporaries of St. Columba; their lives are preserved in forms which suggest little alteration from the original prototype, which in the case of St. Ciaran was probably composed not later than the 9th century (J. F. Kenney, *Sources*, I, 1929, 379, 394). If Dr Curwen's suggestion is correct⁵⁶—that the Wessex hypocausts were corn-drying kilns—then these modern Hebridean kilns can be linked, through the Dark Ages, with the prehistoric Iron Age culture of southern Britain; and his main thesis receives striking confirmation.

⁵⁶ The suggestion was Prof. Gowland's; see *Archaeologia*, LXXI, 151-8. Corn-drying kilns seem to have been a product of Roman culture in western Europe; they are mentioned by Ovid in two passages: *Fasti*, ii, 519-26; vi, 313-4. As far as I know they do not occur in Britain before the latter part of the Roman period, though it is likely that previous to their introduction corn was dried on the domestic hearth as in Denmark (see *ANTIQUITY*, 1938, XII, 151-2). Boswell saw corn dried in the living-room in Raasay (op. cit., 138).—E.C.C.

The Thracian Rider and St. George*

by GAWRIL KAZAROW

THE Thracians were a deeply religious people;¹ this is attested not merely by ancient writers but also by the many votive monuments found in the former Thracian provinces, dating chiefly from the second to the fourth centuries. Rostovtzeff was justified in remarking some years ago that 'in the Roman period, Thrace experienced a religious renaissance; in cities and villages there sprang up hundreds of shrines of Greek type, which were filled with votive offerings after the Greek pattern; yet the Thracians worshipped their divinities in native fashion, and kept their festivals with mystic-orgiastic ritual'.²

Among the Thracian votive inscriptions and reliefs known to us, those representing the so-called Rider Hero hold chief place; 1200 reliefs dedicated to him have been found on over 300 sites in Bulgaria, and are preserved in the national museum at Sofia and in provincial museums. It can be confidently asserted that there was no village in Thrace without its simple shrine dedicated to this divinity. The finds were often made near springs, on high ground; a few may also have come from tombs, although the evidence for this is not satisfactorily supported.

The majority of these reliefs and bas-relief statuettes are of local marble or limestone, and are quite small. They are rectangular or pyramidal in shape, with arched end; less often they are pointed in gable fashion. This type of stele is common in the religious art of eastern Europe, as Saxl³ has lately established. The reverse side of the plaques is only roughly cut, and the same is the case with the statuettes; obviously, like the ikons in Greek Orthodox churches, they were set on shelves, propped or hung against the walls of the shrine, as may be

* Translated by Professor R. G. Austin.

¹ C. Patsch, *Sitzungsb. Wien. Akad., Phil.-Hist. Kl.* 217, 1 Abh. 82.

² *Journ. des Ministeriums für Volksaufklärung*, 1911, pt. IV, 42. Cf. W. Weber, *Rom, Herrschertum und Reich*, 84.

³ *Mithras*, 28, 34 ff.

THE THRACIAN RIDER AND ST. GEORGE

seen from a relief in the museum at Plovdiv with holes pierced in its upper part. In the shrine at Sliventza,⁴ niches for holding the plaques have been cut in the rock, and sometimes isolated rocks have been incised for the same purpose.⁵

As is well known, the native Thracian divinities, like those of other countries, are represented as Græco-Roman types; it is therefore difficult, and very often impossible, to arrive at the original character of any particular divinity, concealed as he is under a foreign dress, especially as our knowledge of the Thracian religion in the classical period is derived from very scanty sources. The rider-hero is a case in point: to make a pictorial representation of their Rider God (an original Thracian conception), the Thracian sculptors appropriated the Greek type of rider-hero, together with the name "Ἡρως."⁶ Probably they took as their model such monuments as the stele from Abdera,⁷ where the hero is shown armed and wearing tight breeches, which betrays local Thracian influence.

These hero-reliefs may be divided into three main types,⁸ of which only the second concerns us here, where the hero is shown as a hunter, riding (FIG. 1). He generally appears as quite youthful, with thick curly hair, and no beard; very occasionally he is bearded; he wears a chiton, and a chlamys flutters behind him; often too he has breeches and hunting-boots; he brandishes in his uplifted right hand a spear or a lance, which is often apparently only painted in. Actually the traces of colour found on many reliefs show that the often crude portraits were supplemented and animated by the use of paint.⁹ Less frequently the rider carries a round or oval shield in the hand which is hidden behind the horse's head. Apart from the principal figure, an altar is generally shown in the right corner of the relief, and behind it a tree and a snake; sometimes one or two female worshippers in long garments stand before the rider; behind him stands a servant, holding the horse's tail in his right hand and often a lance in his left. Below the horse there is generally a dog, or else a lion takes his place.¹⁰ The most frequent

⁴ Pauly RE. VI A, 479.

⁵ Pauly RE. VI A, 484.

⁶ Casson, *Macedonia, Thrace and Illyria*, 250.

⁷ Avezon and Picard, *Bull. corr. hell.*, 1913, xxxvii, 118; Kazarow, *Arch. Anz.* 1918, 50; *Cambr. Anc. Hist.*, plates III, 54 c. Cf. Seure, *Rev. ét. anc.* 1912, xiv, separate impression, 25.

⁸ Pauly RE. suppl. III, 1137.

⁹ Seure, *Musée de Belgrade: Rev. ét. anc.* 1923-4, separate impression, 18.

¹⁰ *Germania*, 1933, xix, 315.

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quarry is a boar, an animal which seems to have been common throughout Thrace ; we may note, for example, that the harbour of Stageira was called Kapros (= ' boar ').¹¹ Probably the fight of the hero with the boar had a religious-mystic significance : the boar symbolizes the malignant power that threatens man, which the hero tracks down and destroys.¹²

Another common scene shows a lion gripping or tearing to pieces a bull which has been beaten to its knees. This group, which is of eastern origin, has not as yet been definitely interpreted. Cumont remarks :¹³ ' it is most probably an astrological symbol, the bull is the zodiacal sign of the spring, the lion that of summer ; and the vegetation of spring is destroyed by the heat of the dog-days '.

It is plain from the reliefs that apart from being a hunting god, the hero was principally honoured as a chthonic divinity,¹⁴ in which capacity he was considered as the protector of vegetation and giver of fertility. In a relief in the Bruchenthal museum, a man is shown below the rider, tilling a field ; in the strip beneath, the peasant with his wife is seen bringing an offering to the hero.¹⁵ On a fragment from near Silivria,¹⁶ three pairs of bulls are shown under the figure of the rider. The hero ' Pyrmerulas ',¹⁷ who occurs in some Thracian dedications, is probably to be explained as a protector of the corn ; while in other dedications the hero also served as protector of the herds,¹⁸ and as such bore the name Suregetes.¹⁹ An interesting relief from Varna is dedicated to the hero Manimazos, by a company of tunny-fishers (θυνηται) ;²⁰ and on a hitherto unpublished relief from southern

¹¹ Strabo VII fr. 35 ; Mela II, 2, 30. Perdrizet, *Rev. numism.* 1903, VII, 313.

¹² Perdrizet, l. c. ; Rostovtzeff, *Artibus Asiae*, 1932, V, 104 ; Picard, *Rev. hist. Relig.* 1922, LXXXVI, 154.

¹³ *Orient. Relig. im röm. Heidentum* (1931), 223, n. 7. Cf. Graillot, *Mélanges Perrot*, 1903, 143 ; Delatte, *Bull. corr. hell.*, 1913, XXXVII, 257.

¹⁴ Cf. Tudor, *Ephem. Dacor.* 1937, VII, 225.

¹⁵ Rostovtzeff, *Mém. présentés à l'Acad. des Inscr.* XIII, 2, 399.

¹⁶ Seure, *Bull. corr. hell.*, 1912, XXXVI, 591, fig. 29.

¹⁷ Pauly RE. suppl. III, 1142 ; VI A, 476.

¹⁸ Seure, l. c., 592 ; Rostovtzeff, *Gesellsch. und Wirtsch. im röm. Kaiserreich*, I, 344 ; Pauly RE. VI A, 483.

¹⁹ Pauly RE. VI A, 476.

²⁰ Salač and Škorpil, *Rozprawy Česke Akad.*, 1928, 12, no. 4 ; Rostovtzeff, *Gesellsch. etc.* II, 312 ; Jorga, *Istoria Românilor*, I, 1, 83.

THE THRACIAN RIDER AND ST. GEORGE

Bulgaria a river-god is depicted beneath the figure of the hero.²¹ The fact that many of the shrines were near springs shows that the god was also thought of as the giver of water.

It may be seen therefore that the hero was a powerful nature-divinity, whose influence extended to all human activities. This will explain his close connexion with other deities also (*e.g.* Apollo, Asclepius, Dionysus, the Dioscuri, Silvanus); on two reliefs from Moesia he appears as the protector of horses along with Epona.²²

SAINT GEORGE

The people of Bulgaria regard St. George's day (April 23) as being probably of greater importance than even Easter itself. Many folk-songs celebrate the saint; a typical motive is as follows. On his feast-day, St. George goes out to inspect the fields, meadows and pastures; he may find the vegetation and the cattle in good condition, but sometimes there is a drought, and the fields are athirst for rain, the cattle long for green fodder. So the farmers and herdsmen beg him to send rain, and he 'opens earth and heaven'; abundance of rain falls, and the crops again thrive. In other variants, the saint gives abundant dew on his feast-day; but later, on Ascension Day, if the crops are already in ear, he makes a fresh round of the fields. Very often the battle of the saint with the dragon is told. In his journey through the fields he meets a three-headed dragon and orders him off; but the dragon will not obey, and the saint does battle with him, defeats him, and cuts off his heads, from which spring three rivers: one of wheat, for the farmers; one of milk, for the herdsmen; and one of wine, for the vineyard-workers. In many versions the saint himself appears as the herdsman, who, leading his cattle to the pastures, meets the dragon and slays him after a fight.

I would add that many folk-customs, partly magic in character, but sometimes purely games, are connected with the eve and day itself of St. George.²³ On this day the straw preserved from Christmas Eve is burnt in the fields, or an Easter egg is buried in the ground. The herdsmen must not drink milk before this day, or kill any lambs. The

²¹ The hero-relief from Urum-jeni-koï was originally built into the wall of the village well; after it had been removed and transferred to the museum at Sofia, the flow of water was diminished: so a peasant told me when I visited the village in 1926 (*Arch. Anz.*, 1927, 331).

²² Pauly RE. suppl. III, 1143 ff.

²³ Arnandoff, *Die Bulgar. Festbräuche* (Leipzig, 1917), 39 ff.

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milk is drawn in a special way on the feast-day, and then given to the poor ; and on this day too a male lamb is brought as an offering, blessed by the priest, and afterwards eaten at the communal table.²⁴

Thus it is clear that in folklore the person of St. George is closely connected with that of the hero. Christianity entered Thrace fairly early ; the Bessi in Rhodope were converted by Bishop Nicetas of Remesiana in the fourth century. It is quite probable that the two religions mutually influenced each other.²⁵ The Thracian peoples were later absorbed by the Slavs who overran the Balkan countries ; but the preservation of many old Thracian place-names, especially names of rivers, up to the present day,²⁶ leads us to conclude that the Slavs took over also the Thracian religious beliefs. Thus we can suppose that the new rider-saint appropriated the favour which the hero enjoyed among the original population ; he entered into the inheritance of the hero, just as for example he succeeded Mithras in the region of the Caucasus.²⁷

The continuity of the cult and of the cult-places—in spite of the change in the people of the country—is shown by the fact that in Bulgaria, chapels of St. George are often built on the sites of the hero's shrines. For example, on the slope of Rhodope, south of the village of Varvara (Barbara) in the canton of Pasardžik, there is a mountain-spring, near which is a chapel of St. George ; reliefs of the hero have been found near by,²⁸ and recently also a pillar with a dedication to Asclepius. In the chapel of St. George in the village of Zabernovo (canton Malko-Tirnovο in southern Bulgaria) a hero-relief, found in the neighbourhood,²⁹ stands as an ikon of the saint. Dumont in his day³⁰ saw an ancient hero-relief in the Armenian church at Plovdiv, which was honoured as a representation of the saint, with wax tapers burning before it. At Sofia, too, there are hero-reliefs in the museum, which formerly served as ikons in churches ; on many the name of the saint is scratched in Slav lettering. An especially instructive example is a

²⁴ From information given me by M. Vakarelsky, Curator of the ethnographical museum at Sofia.

²⁵ Dumont, *Mél. d'arch.*, 290.

²⁶ Tomaschek, *Die alten Thraker*, II, 2, 91 (*Sitzungsb. Wien. Akad., Phil.-Hist. Kl.*, CXXXI, 1 Abh.).

²⁷ Cumont, *Rev. hist. Relig.*, 1936, CXIV, 25 ; *JRS.*, 1937, XXVII, 69.

²⁸ *Bull. de l'Inst. Arch. Bulg.*, 1926-7, IV, 115.

²⁹ Cumont, *JRS.*, XXVII, 69, n. 34.

³⁰ *Mél. d'arch.* 290.

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relief which was found in a private house at Plovdiv among some other Christian ikons ; when the woman of the house was asked to present it to the museum, she only consented reluctantly, crossed herself three times before the image, kissed it, and gave it to the director of the museum with much agitation.³¹

Dumont also remarked³² on the striking similarity between the representation of the hero and that of St. George : ' il serait intéressant pour l'histoire de l'art, de savoir quelle a été l'influence de cette représentation sur le type consacré de saint-Georges qui paraît avoir été fixé dès les premiers siècles du christianisme '. As is well known, no explanation has yet been found³³ of the origin of the Christian rider-saints, either in general or St. George in particular ; naturally we cannot go into this question here. Von Wesendonk³⁴ was probably right in remarking that ' more than one factor must have been at work in the development of the type of the Christian saint striking down the dragon '. It is not improbable that among the ancestors of the typical representation of St. George which I have mentioned must be counted also that of the hunting rider-hero ; he not only exercised a direct influence, but perhaps also an indirect one through the medium of the Egyptian *Heron* (=Horus) who, according to Rostovtzeff's conclusions³⁵, probably appropriated Thracian characteristics among others.

Of course, the snake in the Thracian reliefs is not the hero's enemy, but a symbol of the soul. This was either not understood by the Christian artist, or adapted by him to suit his conception of the saint. Such an adaptation was especially natural if only those types were available in which the snake is shown not in front of the rider, but beneath him ; cf. a relief from the shrine of Asclepius at Glava-Panega³⁶ (FIG. 2). There is another at Karaïssen (canton Svišov)³⁷. In this connexion it may be noted that the Thracian hero was often depicted with a nimbus ; e.g., on two hitherto unpublished reliefs (FIGS. 3 and 4), one from Čauševo (now Methodievo, canton Jărgovište), the other from the district of Šumen.

³¹ *Arch. Anz.*, 1926, 9. ³² l. c., 219. Picard, *Rev. hist. Relig.* LXXXVI, 152.

³³ Cabrol, *Dict. d'arch. Chrét.*, VI, 1021 ; Lucius, *Anfänge des Heiligenkultes* (1904), 86, 239, concludes that the beginnings of the St. George legend go back to the 4th century.

³⁴ *Orient. Literaturzeit.*, 1920, XXIII, 268.

³⁵ *Aegyptus*, 1933, XIII, 511 ; *Yale Class. Studies*, 1935, v, 209 ff.

³⁶ Dobrusky, *Arch. Mitteslides Nationalmus. in Sofia*, 1907, I, 72 no. 70 ; Pauly *RE.* suppl. 1135, VI A, 497.

³⁷ Dobrusky, l. c., III, no. 160.

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Finally, we must also consider the representations of the so-called 'Thraco-Mithraic' or 'Danubian' rider, in which, under the horse's feet, there is a man's figure lying outstretched—clearly a vanquished enemy. Sometimes there is a large fish instead of a human form.³⁸ These may also have influenced the development of the Christian type of dragon-slaying saint.

Many of the hero-reliefs are in bas-relief, and look as if they had been carved out of wood; such probably served later as models for the wooden figures of the saint. There is a wooden ikon from Sozopol (FIG. 5) now in the ecclesiastical museum at Sofia.³⁹ On a rectangular framed wooden tablet are carved the figures of SS. George and Demetrius, riding side by side; St. George has pierced with his lance a crocodile or hippopotamus rising from the water, while St. Demetrius has pierced the head and part of the body of a snake, which is winding itself round the stem of a double-topped palm-tree (this recalls the tree with the snake, common in the Thracian votive reliefs). With his left hand, St. George carries a round shield, as does also the Thracian rider on several reliefs; his bow can be seen above the horse's back. In later times the wooden tablet was painted over in colour.

³⁸ See Rostovtzeff, *Mém. présentés*, etc., XIII 2, 385; Dölger, *Ichthys* II, 420; Tudor, *Ephem. Dacor.* VII, 189 (an exhaustive account).

³⁹ Gošev, *Jahrb. der Univ. Sofia*, Theol. Fakult. (1928-9), VI, 1.; the author, to whom I am also indebted for the photograph, ascribes the wooden ikon to the 10th-11th centuries; he also adduced the Thracian reliefs for comparison.

PLATE I



FIG. 1. THE HUNTER RELIEF FROM GLAVA-PANEGA, BULGARIA
(see p. 291)

PLATE II

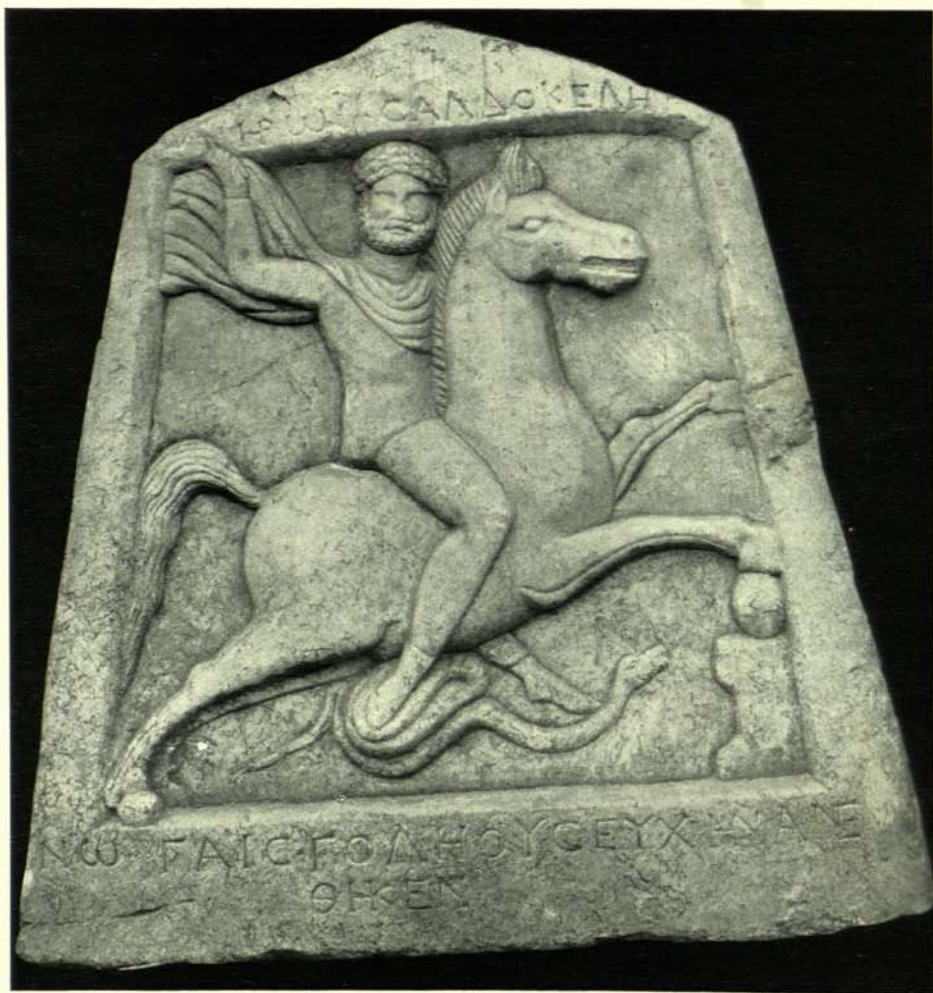


FIG. 2. SHOWING SNAKE RELIEF FROM THE SHRINE OF ASCLEPIUS, GLAVA-PANEGA, BULGARIA
(see p. 295)

PLATE III



FIG. 3. THRACIAN HERO WITH NIMBUS, CAUSEVO, BULGARIA
(see p. 295)

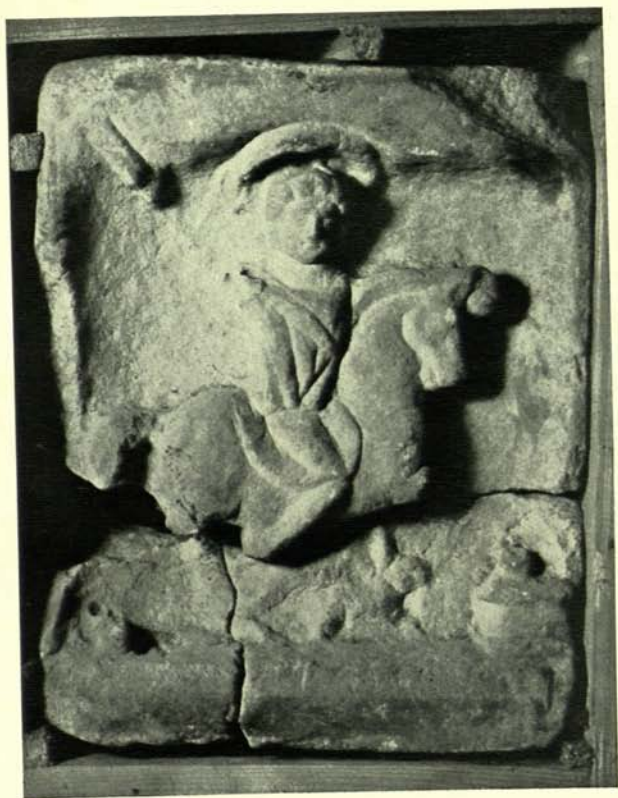


FIG. 4. THRACIAN HERO WITH NIMBUS, ŠUMEN, BULGARIA
(see p. 295)

PLATE IV



FIG. 5. WOODEN IKON OF SS. GEORGE AND DEMETRIUS, SOZOPOL, BULGARIA
(see p. 296)

The Megalithic Tombs of Northern Europe¹

by G. E. DANIEL

DURING the 19th century conclusions of great value concerning the origin and diffusion of the megalithic tombs of Europe were arrived at by the study of a few tombs in various regions : Montelius's *Orienten och Europa*² marks the culmination of research on these lines. In the last twenty-five years it has been gradually realized that before we can speak with assurance of the many problems which the megalithic tombs involve, before we can disperse what has aptly been called 'the murky fog surrounding the megalith question',³ we must have accurate and detailed regional surveys of the prehistoric burial-chambers of south-western, western and northern Europe. As is well known, such surveys have already been produced in many regions ; for example those in Iberia by Obermaier, Vergileio Correia and Pericot y Garcia, and in Brittany by le Rouzic and Forde. In the British Isles we have been exceptionally fortunate in this respect : the work of Crawford and Hencken in England, of Hemp and Grimes in Wales, of Childe in Scotland, and of Estyn Evans in northern Ireland, has made the megalithic tombs of the British Isles better known than those of any comparable region in Europe.

In all these careful surveys, and in the many scientific excavations that have recently been conducted, we are obtaining the basis for a re-survey of all the problems associated with these prehistoric burial-chambers : but before such a survey can be carried out, it is imperative that not only parts but the whole of western and northern Europe

¹ A review of two recent books on the megalithic tombs of Scandinavia and Germany : C. A. NORDMAN, *The Megalithic Culture of Northern Europe*, no. 3 of vol. 39 of Suomen Muinaismuistoyhdistyksen Aikakauskirja (Finska Fornminnesföreningens Tidskrift), pp. 137, 67 text figs. Helsingfors, 1935, 15s od.; and ERNST SPROCKHOFF, *Die Nordische Megalithkultur*, pp. 164, 91 text figs., 66 plates, 6 maps. Berlin and Leipzig, 1938 ; RM. 7.20 (unbound), 8.20 (bound).

² *Antiqvarisk Tidskrift för Sverige* (Stockholm, 1905), XIII, 1-252.

³ C. F. C. and J. Hawkes, *Arch. Journ.* (1933), xc, 321.

should be covered with a network of surveys comparable with those we have mentioned. Until recently two large areas remained in which the 'murky fog' gathered thickest—the south of France, and Scandinavia and north Germany. The latter region comprises the megalithic tombs of Denmark, Sweden south of a line from Oslo to Stockholm, north Germany, and north Holland, which, since the early works of Montelius, Madsen, and Sophus Muller, have not been studied on a general basis with the care they deserve. Recently, however, van Giffen has provided us with a magnificent account of the Dutch megalithic material,⁴ while Schwantes has described afresh the material from Schleswig-Holstein;⁵ and in the two books we are considering here, we are given a first-rate survey of the north European material by two archaeologists whose knowledge of the Scandinavian and north German tombs is unrivalled. These works not only provide a much-needed and readable account of northern megalithic culture for all interested in prehistoric burial-chambers, but they also deal carefully and clearly with the many complex problems involved in a manner which all specialists will value and admire. There can be no doubt that when future archaeologists come to assess the progress of megalithic research, they will give the highest commendation to these works of Nordman and Sprockhoff which do so very much to dispel the thick fog of ignorance which, as we have said, despite the publication of many isolated plans, until recently enveloped these northern tombs.⁶

Professor Nordman's work on northern megaliths is already well known to us through a number of excellent articles from his pen:⁷ recently he was invited by the Society of Antiquaries of Scotland to give the Rhind Lectures for 1932 on the Megalithic Culture of Northern Europe and its connexions with that of the south and west, and his present work is, as he says in his preface, 'an unaltered reprint of the Rhind Lectures'. He has, however, added many bibliographical footnotes (which are in themselves of very great value), and a number of figures. In the first two of his six lectures, Nordman discusses the form, grave-goods and burial rites of the megalithic tombs of northern Europe: he confines his attention mainly to the Danish and Swedish

⁴ *De Hunebedden in Nederland*, 1925. (English Translation, 1927-8).

⁵ *Vorgeschichte Schleswig-Holsteins*, 153 ff.

⁶ It still envelops, alas, the megalithic tombs of the south of France.

⁷ For instance *Jættestuer i Danmark*, *Nordiske Fortidsminder*, 1917. II; *Studier over gånggriftekulturen i Danmark*, *Aarbøger for nordisk Oldkyndighed* (1917).

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material. In his third lecture he discusses the spread of the megalithic culture in northern Europe and its relations with other cultures in that area. His fourth and fifth lectures describe the origins of the Scandinavian megaliths and their relations with the megaliths of other parts of Europe: while his last, and most valuable lecture, deals admirably with the chronology of the Scandinavian tombs.

Dr Sprockhoff, who gave us a few years ago a splendid summary of the megalithic tombs of northwest Germany,⁸ in this book extends his survey to cover all the megaliths of north Germany. His title is somewhat misleading for he does not discuss, save incidentally, the burial-chambers of Denmark and Sweden. Sprockhoff's work is divided into seven sections, the first six of which deal respectively with morphology and burial-rites, weapons, tools and implements, pottery, settlement sites, general cultural conditions, and the chronology of the tombs; while his final section is a short historical summary. The first three sections naturally constitute the main part of the book, and are illustrated with a splendid series of plans and photographs: in addition to this, there are six excellent maps showing the distribution of dolmens, of all megalithic tombs, of thin butted axe-heads, of early flint daggers, of the passage-grave groups, and of the globular amphorae culture (the Kugel-flaschkultur) in Germany. There is no general index to the book, but there is an alphabetical list of all the sites and finds mentioned in the text. Sprockhoff's plans are especially valuable and we have no longer to turn up the crowded diagrams of Krause and Schoetensack for illustrations of the north German galleries.

Sprockhoff's book is not only of the greatest importance in the study of megalithic tombs and of northern prehistory in general: its publication is an important event in the archaeological world, for it is one of the first two volumes to be published in a new series of archaeological monographs edited by Dr Sprockhoff himself under the title of *Handbuch der Urgeschichte Deutschlands*. Sprockhoff's study of the German megaliths is the third volume in this series, Dr Buttler's on the Danubian and Western Neolithic cultures (no. 2 in the series), is the other published volume,⁹ and the whole series is to cover in twenty volumes the archaeology of Germany from the Palaeolithic period to

⁸ *Zur Megalithkultur Nordwestdeutschlands, Nachrichten aus Niedersachsens Urgeschichte*, 1930, no. 4, pp. 1-55.

⁹ W. Buttler, *Der donauländische und der westische Kulturkreis der jüngeren Steinzeit* (1938).

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the Vikings. The promised volumes include Schwantes on the Palaeolithic and Mesolithic, Sprockhoff on the German Bronze Age, Kraft on the Urnfields and von Merhart on the Hallstatt culture. The series is admirable in conception, and if all the volumes are as well written, as scholarly, and as well produced as the two already published, they will form a most remarkable contribution to the advancement of archaeological research. Is it too much to hope, in passing, that the example of this magnificent German series will cause a similar series to be conceived dealing with the archaeology of Great Britain? Surely we are not lacking in the initiative and financial support which is needed to carry through such a series to success?

One is perhaps inclined to estimate the importance of the various regions of western and northern Europe that possess megalithic tombs in terms of the literature on these tombs, and of the quantity of plans that have been published. We, in the British Isles, are inclined to regard our own megalithic tombs as of very great importance, but there can hardly be many more than 1500 prehistoric burial chambers existing in the British Isles in recognizable form at the present day. It comes, then, as a most salutary shock to realize the tremendous number of megalithic tombs in Scandinavia and north Germany. Shetelig refers to 3,600 megalithic tombs surviving in the Danish Isles:¹⁰ Almgren's maps show over 400 dolmens and passage-graves in south Sweden:¹¹ and now Sprockhoff (see his maps I and IV) reveals the very great number of megalithic tombs in north Germany. This statistical evidence alone shows how important are the Scandinavian tombs, and how welcome must be these new analyses of the northern megalithic material. Sprockhoff has much of great interest to say of the destruction of megalithic tombs; and he publishes two highly instructive maps of the island of Rugen showing the distribution of megalithic tombs in that island in 1829 and again in 1929. In 1829 (fig. 62) there were no less than 229 megaliths on the island, yet a hundred years later (fig. 63) there were only 38. Of course some of the 229 are probably included on very doubtful literary references, but, even so, these maps provide a valuable commentary both on the destruction of megalithic tombs in general, and, if the destruction on Rugen is to be taken as fairly typical of the whole northern region, on the original numbers and importance of the megalith-builders in the north.

¹⁰ *Scandinavian Archaeology* (Oxford, 1937), 63.

¹¹ *Sveriges Fasta Fornlämningar från Hednatiden* (Uppsala, 1934), figs. 22 and 23.

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It would be easy and idle to criticize both the books of Sprockhoff and Nordman with which we are here concerned for not being what they never set out to be, namely, what may be called 'catalogue-surveys' of the megalithic tombs of northern Europe. Yet regional survey, before it can be satisfactorily accomplished, must be accompanied by lists of sites, and with a maximum number of maps and plans. In England we have been especially fortunate in this respect, and possess two excellent catalogue surveys of our megalithic monuments, the one done by the Megalithic Survey of the Ordnance Survey, and the other by the Research Committee on Rude Stone Monuments of the British Association for the Advancement of Science. Both these surveys are well on the way to completion, and an excellent series of maps and lists has been published by the Ordnance Survey embodying the results of its Megalithic Survey. In the north of Ireland a similar inventory of megalithic monuments is being prepared under Estyn Evans, and Miss Collum is preparing, with le Rouzic, an inventory of the burial chambers of the Morbihan. Then, of course, we have in van Giffen's great work, already mentioned, a catalogue survey of the Dutch megaliths which is beyond all cavil, save, perhaps, on the grounds of its size. In northern Europe no such catalogue-surveys exist:¹² and we have, for instance, to go back to the magnificent volumes of Madsen for our best plans of the Danish tombs. Sooner or later archaeologists in northern Europe must set about producing detailed lists and maps of their megalithic monuments, and must contemplate the publication of corpora of tomb plans. These are tremendous labours—we have already commented on the number of the Scandinavian megaliths; but they are as necessary as they are tremendous. No one is more fitted to undertake their direction than the two archaeologists whose analytical accounts of the northern megalithic tombs we are here discussing.

Both Nordman and Sprockhoff base their morphological analyses of the Scandinavian and north German megalithic tombs on the classifications of Montelius: Sprockhoff on the simple *dos-gånggrift-hällkist* classifications which Montelius first produced in 1874 at the Stockholm Congress, Nordman on the more elaborate division into nine types which Montelius detailed in his *Orientalen och Europa*. Both, however, introduce interesting modifications of these classifications.

¹² Except on a very small scale such as that of Krause and Schoetensack in the Altmark (*Zeitschrift für Ethnologie*, 1893, xxv, 105 ff.), and of Enqvist on Orust and Tjörn (*Stenålderbebyggelsen på Orust och Tjörn*, Uppsala, 1922).

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Thus Nordman prefers to classify as passage-cists sites such as Mönsted in Jutland, which Montelius described as passage-graves with the passage in line with the long axis of the chamber. Sprockhoff singles out for especial treatment what he calls *die westeuropäischen steinkisten*: some of these (*e.g.*, Züschen, Fritzlar) have a portholed septal slab. Sprockhoff is of course dealing only with the German sites: we must group with them the similar portholed galleries in Västergötland, and the two well-known sites at Weris in southeast Belgium. Montelius insisted that only the cists or short galleries were ever completely covered in by barrows or mounds and this generalization is still often repeated nowadays; but Nordman shows quite clearly that this is not true and that almost all forms of megalithic tomb in northern Europe are sometimes found covered with barrows: 'it seems probable', he writes (p. 16), 'that the actual passage-grave as well as the grave-cist was, as a rule, covered by the barrow'.

Even so, these modifications are not enough to make the Montelian classification a really workable typology. The Montelian scheme distinguishes very properly between the normal passage-grave with a round or polygonal chamber found all over Atlantic Europe, and the T-shaped passage-grave which, despite alleged parallels in many parts of western Europe, is generally agreed to be a Scandinavian development of the normal passage-grave; but the classification does not recognize, nor does Nordman make this point, that there are a number of undifferentiated or V-shaped passage-graves in Scandinavia, that is to say, passage-graves such as Forslov, Ringsted, Söro, Sjaelland,¹³ and Herslev, Langeland,¹⁴ in which there is little formal distinction between passage and chamber; and that some forms of these undifferentiated passage-graves (for instance Skåningegård, Horns, Frederiksborg, Sjaelland¹⁵) correspond to the 'entrance graves' described by Hencken in the Isles of Scilly. While the evolution of the T-shaped passage grave is an exclusively Scandinavian development, the development of the undifferentiated passage-grave, and, finally, of the entrance-grave, is one which also occurs in Spain, Brittany,¹⁶ and the Channel Isles. There is no reason to suppose that these developments are connected with each

¹³ Madsen, *Gravhøje og Gravfund fra Stenalderen i Danmark* (Copenhagen, 1896), no. 45.

¹⁴ Montelius, *Orientalien och Europa*, p. 172, fig. 169.

¹⁵ Madsen, *op. cit.*, no. 3.

¹⁶ The Scilly tombs are probably derived from the Breton developments.

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other ; we may regard the evolution of the v-shaped passage grave in Scandinavia as parallel to similar developments in southern and western Europe. Forms such as Skår, Stenkyrka on Tjörn,¹⁷ and Hjadstrup on Fyen,¹⁸ are probably intermediate between normal passage-graves such as Sjöbol on Bohuslan and Broholm on Fyen and the undifferentiated passage-graves.

It seems likely too that the Montelius dolmen class should be subdivided in greater detail than does Nordman. It is not enough to distinguish between dolmens in round and long mounds : distinction must also be made between rectangular and polygonal (or round) chambers. The polygonal dolmens¹⁹ usually occur in round mounds and but rarely in north Germany, while the rectangular dolmens are most often found in long mounds and are very common in north Germany.²⁰ I am never clear on what formal grounds some of the rectangular dolmens are distinguished from the small cists : many of the rectangular dolmens are below the ground level²¹ and are of roughly the same proportions as the cists.

Nordman emphasizes that the vast majority of the long barrows in Scandinavia and north Germany are not ovate or wedge-shaped, as are most of our British long barrows, but rectangular, *i.e.*, they do not have one end wider than the other. Sprockhoff figures (figs. 42-44) some of the north German long barrows that are wedge-shaped : he shows that they are confined in the main to Rugen and Pomerania, and that the chambers are never placed at the broad end of the barrow, nor is there any formal element such as a forecourt. Indeed the German wedge-shaped long barrows must be regarded as variants of the normal rectangular long barrow of Scandinavia, and can have no

¹⁷ Montelius, *op. cit.*, p. 147, fig. 146.

¹⁸ *ibid.* p. 172, fig. 168.

¹⁹ I use the word dolmen throughout here in the Montelian sense of a small single chamber, and when I say rectangular or polygonal dolmen I refer to the shape of the chamber and not to that of the surrounding barrow. The terms *runddysser* and *langdysser* I translate here as 'dolmens in round barrows' and 'dolmens in long barrows' and not 'round dolmens' and 'long dolmens' as do many archaeologists (*e.g.*, Shetelig and Falk recently in their *Scandinavian Archaeology*).

²⁰ Polygonal dolmens occur very rarely in long mounds. Rectangular dolmens occur more often in round barrows and are then confined mainly to Denmark.

²¹ Such as those recently figured by Schwantes, *Vorgeschichte Schleswig-Holsteins*, figs. 186-188. See also Sprockhoff, *Die Nordische Megalithkultur*, figs. 1-7.

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connexion with the British wedge-shaped barrows. Some of the north German long barrows figured by Sprockhoff are excessively elongated : one at Visbecker Braut (p. 39, no. 52) is about twelve times as long as it is broad, while the Putlos barrow (p. 39, no. 53) is 375 feet long but its width is only 17 feet.

Nordman notes the presence of rectangular long barrows in south Brittany, and is inclined to connect the Scandinavian long barrows with these. We must distinguish at least four types of long barrow in Brittany : (1) the unchambered wedge-shaped long barrow such as Manio 1, 3, and 5 ;²² (2) the wedge-shaped long barrow with a chamber at its broad end, such as Grah-niol in Rhuis ; (3) the rectangular long barrow with closed chamber such as St. Michel or, of a different kind, Kerlescan and Kerlearac ; and (4) the rectangular long barrow with one or more chambers opening into one of its broad sides (*e.g.*, Mané Lud, Mané Kerioned). It is only with the two latter classes that the Scandinavian long barrows may be compared, and the great difference between the form of the closed chambers in the Breton and Scandinavian long barrows makes the fourth class the only valid parallel to the northern long barrows. Indeed such a monument as Mané Kerioned, which has two undifferentiated passage-graves opening into the broad side of a rectangular long barrow, compares very accurately with Herslev on Langeland. But I doubt whether there is any generic connexion between these two sites : W. C. Lukis suggested that the Breton long barrows of class 4 originated through adding chambers to already existing round barrows, and I think that a similar process may have given rise to the Scandinavian long barrows. Nordman himself, writing of the long barrows with several chambers, says they were ' obviously enlarged later in many cases ' (p. 18). Professor Childe thinks that the evolution of the T-shaped passage-grave would naturally give rise to an elongated barrow,²³ and this theory has a great deal to commend it ; but highly-exaggerated T-shaped passage-graves do occur in round barrows (*e.g.*, the site near Sparresminde on Moen).²⁴ I think it is the building of more than one T-passage grave in a row that gave rise to the long barrow in Scandinavia, and that this long rectangular form, once standardized, was then built around other kinds of chambers.

²² This type of monument in Brittany has recently been described by Piggott in *ANTIQUITY*, 1937, pp. 441 ff.

²³ *Trans. Glasgow Arch. Soc.*, VIII, 133-4.

²⁴ Madsen, *op. cit.*, no. 57.

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In an earlier article,²⁵ Professor Nordman was inclined to agree with Montelius's first thesis, namely that dolmen, passage-grave, and long gallery, formed an evolutionary series; but here he accepts Montelius's latest views, expressed in *Orienten och Europa*, that the Scandinavian passage-graves represent a separate movement from western and southern Europe, and I think there can no longer be any doubt that this is so and that the northern dolmens did not develop in Scandinavia into passage-graves. There has, of course, been much argument as to which area of passage-grave culture in Atlantic Europe provided the origin of the Scandinavian graves: Childe has argued for north Scotland and Nordman here argues for Brittany, but it seems to me that the claims of southern Iberia are as strong as any. Sophus Muller first emphasized the connexions both in form and in decoration between the passage-grave pottery of Scandinavia and Iberia: the oculi and rayed sun ornament on some of the Scandinavian pots must surely imply Spanish connexions, and it should be remembered that amber (presumably Danish) was found at Los Millares and Alcala.

Since Fergusson in 1872 published his distribution map of megalithic monuments and indicated by a series of arrows the routes he imagined the megalith-builders had taken, it has been widely held that the movement from southwest Europe to Scandinavia which gave rise to the northern megaliths proceeded around the north of Scotland. Shetelig, however, seemed to favour the English Channel as the route taken by these early voyagers,²⁶ and Nordman certainly does. He is sharply critical of the views of Fox and Rydbeck, which suggest continuous land in the North Sea and no English Channel as late as the end of the third millennium B.C., when these megalithic migrations were taking place. There is no shadow of proof, he says, of the existence of continuous land in the North Sea during the period of megalithic culture, and I think that one must agree with him. Clark has recently summarized very clearly the evidence for the date of the formation of the English Channel,²⁷ and we can no longer argue that the Pentland Firth route was the one adopted by the megalith-builders because of the non-existence or dangers of the English Channel. The absence of strong Spanish affinities in the decoration of the pottery from the north

²⁵ 'Some Baltic Problems', *Journ. Roy. Anth. Inst.*, 1922, p. 36.

²⁶ *Scandinavian Archaeology*, 58-9.

²⁷ *Proc. Preh. Soc.*, 1936, 239.

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Scottish tombs, and their presence in some Scandinavian megalithic pottery, would suggest that the movement from Spain (or by Brittany from Spain) to the north of Europe, did really take place through the Straits of Dover.

Nordman emphasizes in this book a point he made earlier,²⁸ namely that the earliest Scandinavian passage-graves (*i.e.* those with round or polygonal chambers such as Sjöbol and Broholm) are found in east Jutland, the Danish islands in the sound, and the coasts of Bohuslan and Skåne. Sprockhoff however republishes a plan of the 'Denhoog' on Sylt (p. 25, no. 27) and this tomb, together with Ulbersdorf in south Dithmarschen²⁹, suggests to me that there may have been another early centre of passage-grave culture in northern Europe, *i.e.*, in western Schleswig-Holstein. Nordman and Sprockhoff agree in deriving all the Scandinavian passage-graves from these early types: the T-shaped passage-graves and the undifferentiated passage-graves are the most notable developments. In Sweden the T passage-graves become very large and angular—those in the Karleby-Luttra-Falköping area of Skaraborgslan are well-known. In Denmark side-chambers are developed and elaborated (Nordman republishes his plan of the remarkable monument at Alsbjerg), and double-passage graves developed. In north Holland and north Germany the passage to the T passage-grave becomes shorter and shorter, until in the end, as I believe, the long gallery was evolved by omitting the small passage. This line of development to the long gallery seems to me more likely than that suggested by Montelius, which is criticized by Nordman, although he does not suggest any alternative interpretation.

Sprockhoff shows very clearly that the portholed galleries of south Germany and Belgium represent a spread from the Paris basin, and it seems not unlikely that, as Kendrick argued in his *Axe Age*, the Västergötland portholed galleries derive from the same area via sites such as Weris and Züschen. Nordman, however, disagrees with this view, and would derive the idea of the porthole in the Västergötland galleries from the Thuringian cists (such as Allstedt in Weimar) and ultimately from the Caucasus. Of course both theories are faced with the same difficulty: the complete absence of portholes in the megaliths in the area between south Germany and Västergötland.

²⁸ In his *Aarbøger* article already cited.

²⁹ Planned by Schwantes, *Vorgeschichte Schleswig-Holsteins*, p. 182, fig. 196.

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We in Britain are naturally most interested in the connexions between the British and north European megalithic cultures. It has frequently been argued that the Scandinavian dolmens derive from Great Britain, the ordinary passage-graves (such as Sjöbol and Broholm) from the north Scottish tombs, the T shaped passage-graves from monuments such as Wayland's Smithy or Nympsfield in the Cotswold-Severn area, or from the curious Orkney monuments such as the Holm of Papa Westray, Unstan, Quoyness, and Quanterness, and that the Scandinavian portholed galleries must be connected with the portholed megalithic tombs of England. Nordman argues that all these relationships are very unlikely, and I agree with him that it is improbable that any of the elements of the northern megalithic cultures were derived from the British Isles. On the other hand it is likely that the Medway tombs represent a spread to Britain of a north European type: Sprockhoff's plans show that the Medway tombs are easily paralleled in north Germany.

There is one major criticism of the work of both Nordman and Sprockhoff to be made; it is that they do not discuss at length the problem of the origin of the Scandinavian dolmens. They accept the Montelian sequence of the priority of the dolmens over the passage-graves and of the passage-graves over the galleries, and they agree in the derivation of the Scandinavian passage-graves from western and southern Europe, but they pay scant attention to what is, in my mind, one of the major problems in modern megalithic theory, this problem of the antecedents of the northern dolmens. The problem is perhaps not so relevant to Sprockhoff's researches: he publishes a fine distribution map of dolmens in north Germany and derives the German dolmens from Denmark, and this is, no doubt, correct. But to Nordman's survey this matter is of the greatest and most vital importance and one could wish that he, with his intimate knowledge of the northern megalithic material, had devoted a whole lecture to its elucidation.

The dolmen complex in the north has four morphological elements: the round or polygonal chamber, the rectangular chamber, the round mound, and the straight-sided rectangular mound. Nordman fully recognizes that though some of these elements may be matched in western Europe (*e.g.*, the chambers in Britain and the barrows in Brittany) we cannot point to one area outside Scandinavia and north Germany in which all these elements occur: so that, as he says (p. 85), 'there is, therefore, a certain degree of probability in favour of the early dolmens in Denmark being a form that originated in that country'.

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So far I am in complete agreement with Professor Nordman : indeed no impartial student of the comparative morphology of megalithic tombs in Europe can come to any other conclusion than that the northern dolmen did originate in the north. The problem is, in what way did it originate ? Was it created, like a conjurer's trick, apparently out of nothing, or was it evolved from existing megalithic tombs in the north ? Many early archaeologists favoured the conjurer's trick ; Nordman suggests an ingenious but unconvincing compromise. 'I imagine' he says (p. 85), 'that the actual idea of building large stone tombs penetrated to the North, and that there the problem was first solved in the way indicated by the early dolmens.'

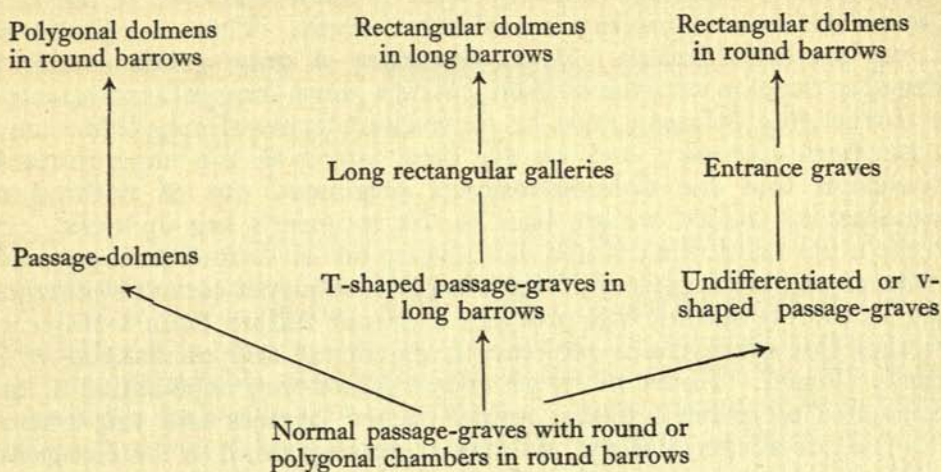
To my mind it is very probable that the dolmen evolved in northern Europe out of various developments of the passage-grave. All the morphological elements of the dolmen complex in the north can be derived in northern Europe from passage-grave forms—I think there can be no dispute on this point. We have already said that it is confusing to speak of the 'northern dolmen': such a phrase conceals the variety of forms in this class. We have spoken of the four morphological elements in the dolmen complex: they are combined in northern Europe to give us four types of monuments; (1) the polygonal chamber in a round barrow; (2) the polygonal chamber in a long barrow; (3) the rectangular chamber in a long barrow, and (4) the rectangular chamber in a round barrow. The rectangular dolmen in a round barrow was probably evolved by a shortening of the entrance graves we have already mentioned: sites such as Sonderskov³⁰ and Vildsted, Flinterup,³¹ (both in Söro, in Sjaelland) are probably intermediate between the entrance-graves and the short rectangular chambers or dolmens. The rectangular dolmen in a long barrow probably developed from a shortening of the closed long galleries so common in northern Europe. The round or polygonal chambers in round barrows probably developed out of ordinary passage-graves such as Sjöbol and Broholm, and the curious 'passage-dolmens' perhaps represent intermediate stages between passage-grave and polygonal dolmen. The polygonal chamber in a long mound is a very rare and unusual form and may be due to a late fusion of some of the morphological elements in the dolmen class: in any case, some of the normal passage-graves with round or polygonal chambers are occasionally found in slightly elongated long barrows.

³⁰ Madsen, *op. cit.*, no. 43.

³¹ *ibid.* no. 47.

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This polygenetic theory of the origin of the northern dolmens is set forth schematically in the accompanying diagram.



Such a theory of the origin of the northern dolmen as I have outlined clearly implies that all the dolmens must be later than at least a large number of the passage-graves, and this is, of course, in complete opposition to existing orthodox theory which upholds that doctrine of the priority of the dolmen in the north which Montelius in 1874 first expounded on inaccurate distributional evidence.³² Both Nordman and Sprockhoff maintain this priority, but, fortunately, I am in very good company in supporting this rankest of heresies, for Professor Forde, after discussing a number of Danish finds, wrote: 'Such finds throw doubt on the schematic view that the passage-graves are invariably later than the smaller tombs',³³ and in his recently-published presidential address to the Prehistoric Society, Dr Mahr says, 'I think that both the scheme Montelius established for Scandinavia, and the one Bosch Gimpera still upholds for Iberia, are untenable'.³⁴

This is not the place to discuss the arguments for and against the priority of the dolmen in the north, nor is it, perhaps, fair to say that in Iberia, in Brittany, in Ireland, and in southern Britain, the priority of

³² See *Compte Rendu* of the 1874 (Stockholm) *Congrès d'anthropologie et d'archéologie préhistoriques*, 161-2.

³³ *Amer. Anth.*, 1930, xxxii, 99.

³⁴ *Proc. Preh. Soc.*, 1937, 340.

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the dolmen has been argued to be a myth. As Estyn Evans and Miss Gaffikin say, 'the dolmen myth dies hard',³⁵ and I suspect it will need a great deal of exposition and argument to show that even in northern Europe the dolmen priority is probably a myth. These are the horns of our present dilemma: if the sequence of grave-goods (which is alleged to develop with the dolmen—passage grave—long gallery sequence) be correct, the dolmens must be the earliest forms of megalithic tomb in northern Europe; and we are then forced to the uncomfortable conclusion that the dolmen-complex originated out of nothing in Scandinavia—indeed we are back to the conjurer's bag of tricks. If, on the other hand, the dolmen did develop out of various passage-grave forms, as we have suggested, the grave-goods sequence cannot be correct. And in merely stating this problem I cannot refrain from wondering whether this grave-goods sequence is as correct and unshakable as is usually alleged. I have never yet seen a satisfactory explanation of the occurrence of collared flasks, funnel-necked beakers and thin-butted celts (*i.e.*, of allegedly early 'dolmenic' grave-goods), in the elongated T shaped passage-graves of northern Germany and Holland, which must, on any theory, be late in the series.

I hesitate to develop here the fascinating problems involved in the origin of the Scandinavian dolmen. I want to do no more than indicate, what neither Nordman nor Sprockhoff do, that there is a very vital problem involved in the Scandinavian dolmen, and that the accepted Montelian sequence of northern tombs is at present open to severe criticism. It is to be hoped that in the near future Professor Nordman and Dr Sprockhoff will increase our indebtedness to their researches—an indebtedness made very heavy by these present admirable surveys—by discussing in detail the manifold problems of the origin and date of the Scandinavian dolmens.

³⁵ *Irish Naturalists Journal*, 1935, v, no. 10, 5.

Biskupin

An Early Iron Age Village in Western Poland

by J. KOSTREWSKI

THE village of Biskupin is situated in the northern part of Great Poland, six miles from Znin, 65 miles to the northeast of Poznań and to the southwest of Toruń, the capital of Polish Pomerania. Nowadays it is famous, not only in Poland but throughout the world, for the remarkable discoveries made in its vicinity by the Poznań University Archaeological Expedition. Excavations have been carried on for four years, and have revealed the ground plan of a prehistoric stronghold which was built on a peninsula jutting into the lake of Biskupin, on the surface of a former peat-bog, in the Early Iron Age, between 700 and 400 B.C. but abandoned in consequence of its inundation by the waters of the lake. The site was covered with a thick deposit of sand and mud, which protected the remains against atmospheric influences, while the dampness of the ground caused the preservation in excellent condition of the lower portions of the huts and the wooden defensive works, as well as the roads and breakwaters.

During the Bronze and the Early Iron Ages a great part of western and central Poland as well as eastern Germany was inhabited by an agricultural people known as the Urnfield people, of Lusatian type, and who are considered by nearly all Polish prehistorians as ancient Slavonic. Being threatened with invasion by the cist-grave and face-urn people of Pomerania, who were probably of ancient Baltic stock, they took refuge in forts constructed of wood and earth placed in inaccessible spots, for the most part on islands and peninsulas. Lusatian forts of this kind have been identified in northern Poland, *e.g.* at Komorow in the district of Szamotuly, at Czeszewo (Wagrówiec), Jankowo (Mogilno), Kruszwica (Inowrocław) and at Wilczyn (Konin). Nothing but the necessity of defence can have induced the prehistoric inhabitants of the neighbourhood of the present Biskupin to establish themselves on the damp and peaty peninsula extending into the lake, which was both unhealthy and unsuitable for building. This peninsula,

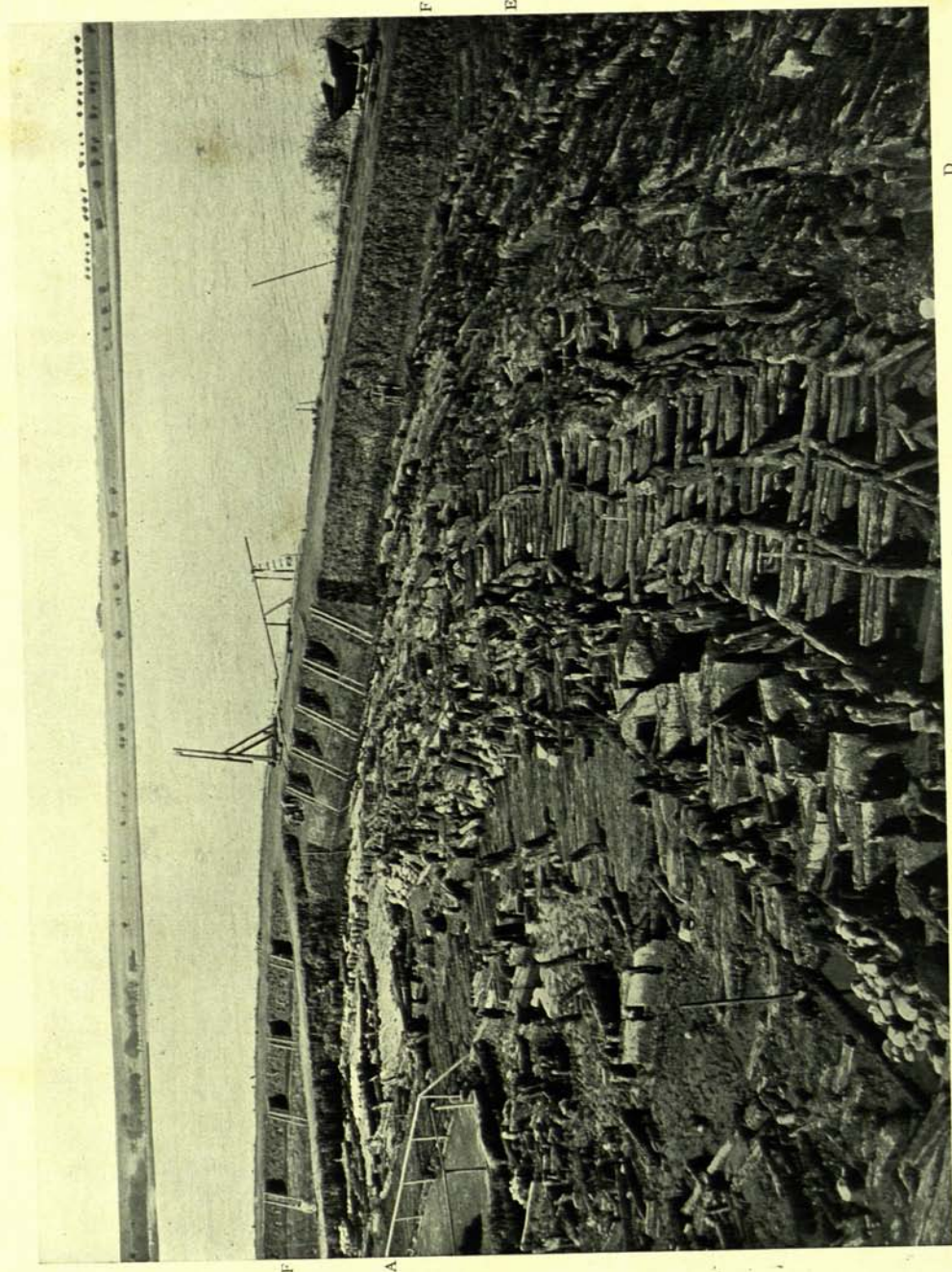
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surrounded on three sides by the lake and cut off on the land side by a broad strip of marshy ground, was further fortified, as the excavations hitherto made have indicated, by a wooden rampart (PLATE I) filled with beaten earth, which was carried round the whole site. This rampart was built three times, and each time nearer to the centre of the peninsula. Only small fragments of the earliest and northernmost have survived; it was clearly destroyed by water (PLATE I, *e*). Later the area enclosed within ramparts was reduced and the first breakwater constructed, and within its shelter a second rampart was raised (PLATE I, *c*). When this latter was partially destroyed by fire, it was replaced throughout a considerable length by a third, rather narrower, wooden rampart 8 ft. wide, running parallel inside and south of it (*b*), which however is not continuous, but is interrupted by a row of huts, because the old rampart was well preserved at this point. It was constructed of beams, overlapping and placed crosswise, chamfered at the intersections for security, and supported by piles driven in vertically on the inner side. The result was two or three rows of caisson-like chests, which were then filled with stamped earth. Considerable remains of the middle and latest rampart, in places as much as three feet high, have been laid bare in the north and east of the peninsula, while on the south the rest of the rampart, which once prevented access on the land side, can even now be clearly identified.

Along the middle rampart a row of piles were driven in obliquely to protect it against the undermining action of the waves. Further towards the lake is a double row of similar piles, constituting the oldest actual breakwater, and beyond it again another, consisting of seven or eight rows of great piles driven obliquely into the edge of the lake and strengthened by the imposition of horizontal beams (PLATE I, *d*). The innermost of these breakwaters is considerably lower—perhaps $2\frac{1}{2}$ feet—than the second. Obviously then the original low breakwater had to be replaced by a new one, higher and a little further towards the lake, owing to the rise in the water-level. Access to the rampart was facilitated by a circular street running along the inner side of it (PLATES I, *a*, and II), and three great piles, driven into the edge of this road at a point where a sharp turn rendered it difficult to build a house, seem to have supported a kind of gangway leading on to the top. Within the latest rampart were found heaps of stones, apparently laid there to be hurled against an advancing enemy.

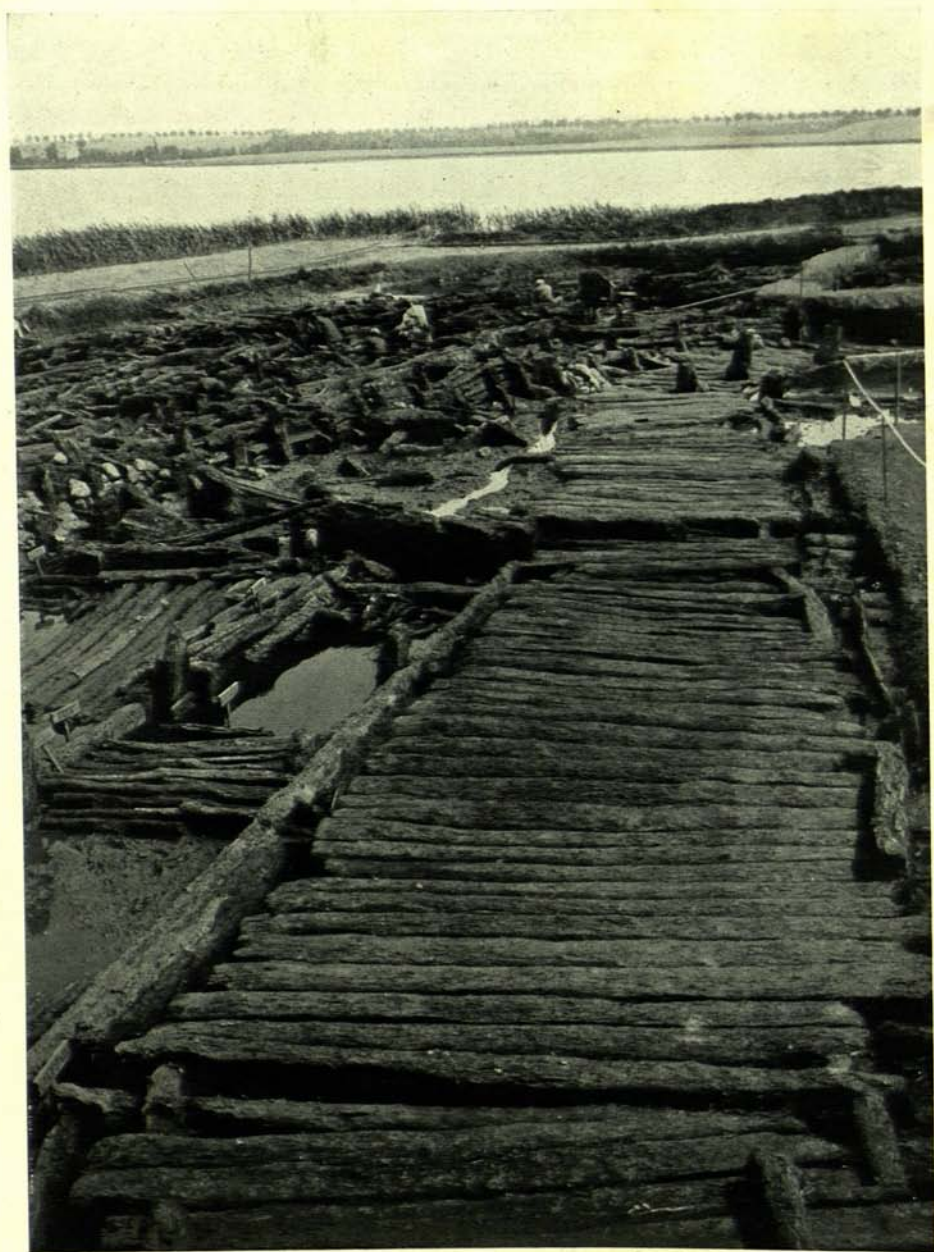
The area thus fortified was occupied by a populous settlement, composed of from 80 to 100 huts, built on a layer of birch fascines

PLATE I



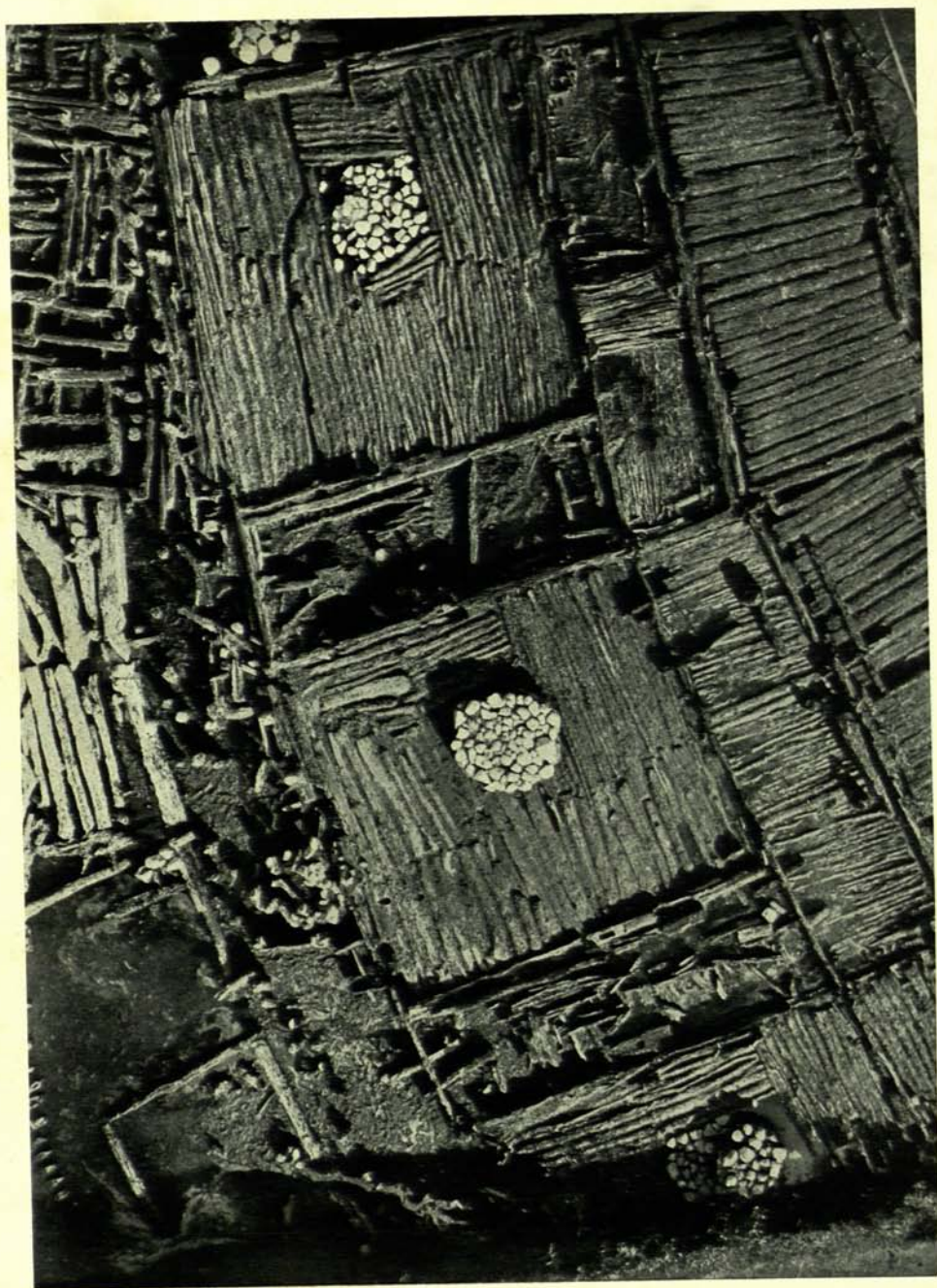
CIRCULAR ROAD, BISKUPIN, POLAND (see p. 312)
 A, Circular road. B, Latest rampart. C, Middle rampart. D, Breakwaters. E, Foundations of the earliest rampart. F, Dyke built by the Expedition
 PLATES I-III *ph.* W. Koczka

PLATE II



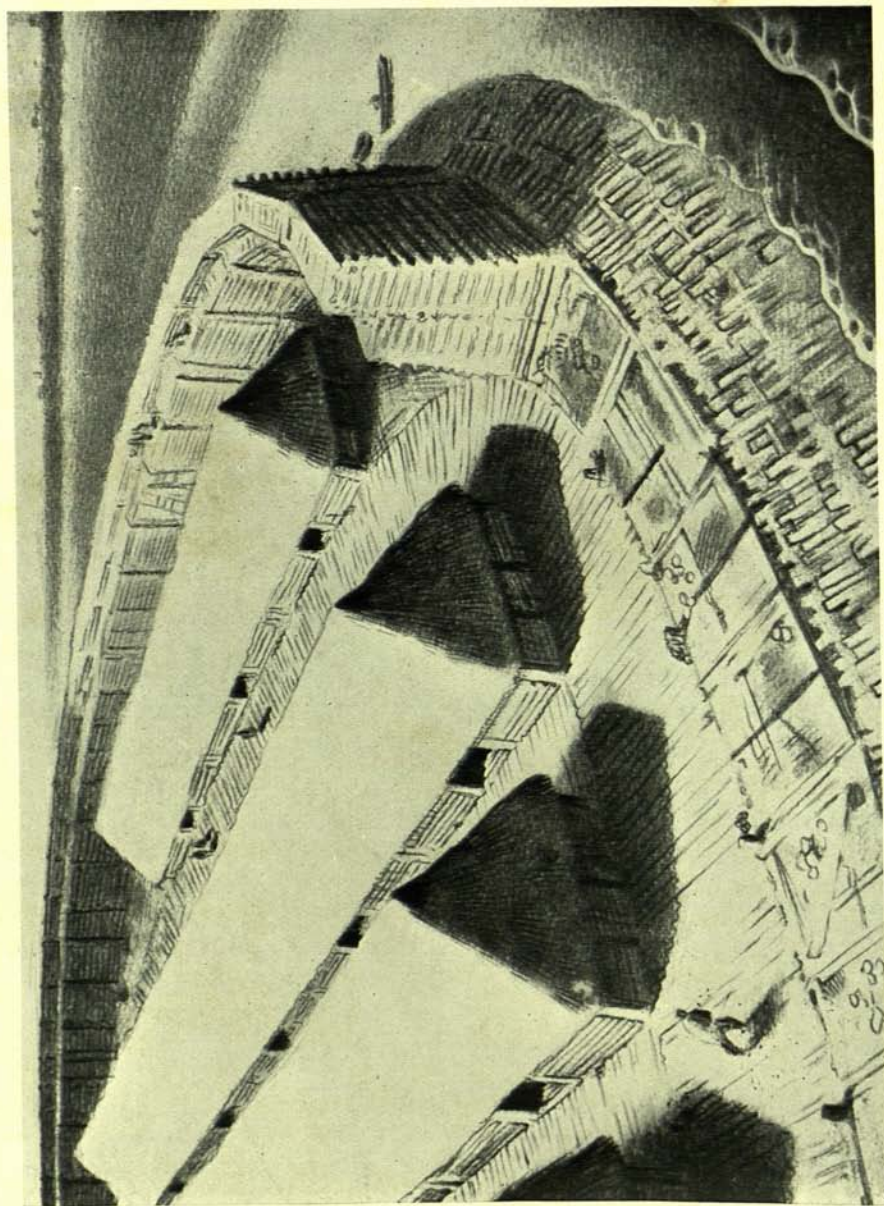
NORTHERN PART OF THE CIRCULAR ROAD, BISKUPIN
Centre, left : entrance to a hut. Top, left : ramparts

PLATE III



VERTICAL VIEW OF TWO HUTS COMPRISING THREE ROOMS, BISKUPIN
Top : middle rampart. Below : corduroy road

PLATE IV



RECONSTRUCTION OF THE NORTHERN PART OF THE VILLAGE OF BISKUPIN

From a drawing by W. Boratynski

BISKUPIN

resting on the surface of the peat-bog. The ground plan was laid out in a masterly fashion which would have done no discredit to a modern town-planner. In the area so far excavated eight perfectly parallel roads or lanes have been laid bare, running from west to east and connected by an outer one, running round in a half circle within the rampart. These lanes were of corduroy construction, that is to say, made of thick oak logs. On either side of each street were rows of wooden huts standing end to end and actually touching. Indeed there was frequently only a single common end-wall. The huts were about ten yards square, and their doors, sometimes eight feet across, were always on the south side, evidently serving to let in light. These huts usually contained two rooms; a main one with the hearth and a vestibule, six or eight feet broad, which took up the whole front. Sometimes, the main space was divided into two compartments; one, smaller than the other, having perhaps served for the accommodation of cattle or as a sleeping-room (PLATE III). To the right of the entrance, in the main room, was the round (rarely square) hearth, most frequently made of stones and as much as six feet in diameter, but occasionally of nothing but clay. The floors were composed of wooden beams resting on fascines of crossed or sometimes interwoven birch sticks and branches, and were covered with a layer of clay to diminish the danger of fire. The stone hearths themselves were also overlaid with clay, which preserved them from being blackened or split by the heat.

All the houses are built on the same plan (see FIGURE, p. 315). At the corners are placed round posts of pine, in each of which are cut two vertical grooves, running the whole length of the post, an angle of ninety degrees separating the one from the other. Between these corner-posts are flat ones, usually of oak, with two vertical grooves. Into these grooves are fitted, one upon another, beams or rough-hewn planks with flattened ends. In some of the better preserved huts as many as three still remain in position. The door-posts were also grooved on the outsides, their door sides being smooth. At the bottom all these posts were supported by cross pieces running through them and projecting on either side, to prevent them sinking in the peat-bog. This method of building is still employed in various parts of Poland, and even at Biskupin itself there is a peasant's cottage constructed on exactly the same principle, so it may be that an ancient building tradition has been preserved for 2500 years. As the upper parts of the huts have been destroyed, it would have been impossible to estimate the height had not two or three posts from destroyed ones

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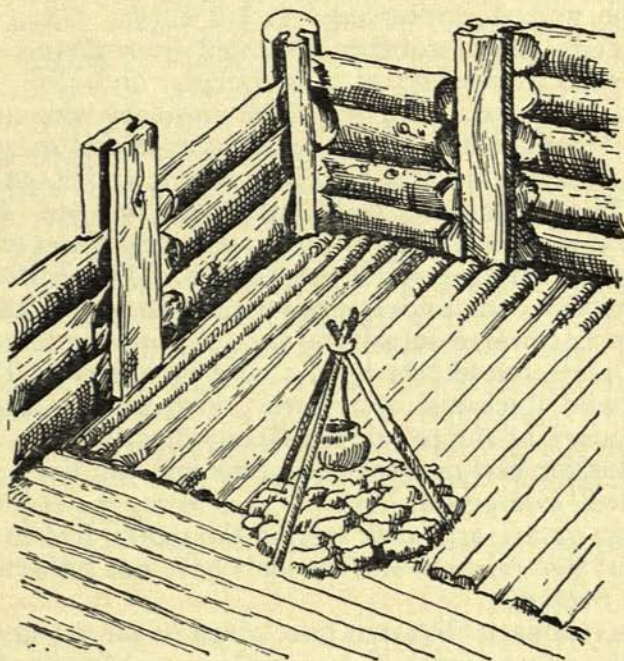
been preserved by being used a second time in the floors or the lower parts of the walls. Some of these are 13 feet long, so that, allowing for 3 feet in the bog, the height of the walls was probably 10 feet.

A number of observations go to show that the huts excavated at Biskupin are not all of one date. Huts were frequently destroyed by fire, and new ones built on the same site, in which case remains of the old ones were so far as possible incorporated in the new. In some, therefore, we find two door-posts side by side, or two corner posts, or flat wall-beams from two separate huts that were built in succession on the same site; indeed there are occasionally remains of three huts built one after the other on the same site at different periods. Two floors and two hearths, one above the other, are found comparatively frequently, separated by a layer of soil twelve to twenty inches thick, and there are a few examples, especially in the lower or northerly portion of the area, of two or three levels in a street. In either case the lower level, alike in hut and street, is solidly constructed of thick oak trunks while the upper is carelessly and hastily composed of thin birch poles. These later road and floor surfaces are evidently to be connected with some great flood which inundated the settlement and compelled the inhabitants to raise its level. When this settlement was founded the level of the lake must have been considerably lower than it is today, even though it was markedly lowered a few years ago by the deepening of the Gasawka stream, which runs through it. Evidence of this is found in the fact that the hearths of many huts which have been excavated are now below the surface of the lake. During the course of the settlement's existence, however, there must have been a marked increase in the volume of water in the lake, due not only to local causes such as the silting of the bed of the Gasawka, but also to a general increase of rainfall; for the researches of palaeobotanists show that in the Early Iron Age the climate of Poland, in common with that of a considerable part of Europe, was steadily becoming damper and colder. Our excavations confirm this for the northern part of Poland. The influx of water due to the increased rainfall seems finally to have become so great that the inhabitants abandoned the flooded site. But that which was a catastrophe for them has turned out a blessing for archaeology. For although everything which was above water level has been completely destroyed, the foundations and lower parts of the huts and the other constructions, covered with water and earth, have been preserved almost as they were left 2300 years ago.

This protective layer of sand and mud has also preserved a large

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number of tools, ornaments and weapons used by the ancient inhabitants, and even a few pieces of furniture, such as the lower part of a family plank-bed discovered in one of the huts. Pottery especially is very well represented. Besides coarse ware there are some very beautiful, richly ornamented specimens: *e.g.* incised vessels encrusted with white material or painted with red ochre, lumps of which have been found



METHOD OF CONSTRUCTION OF HUTS AT BISKUPIN

on the site. Two vessels are decorated with very conventional figure-drawings: a few riders, and a hunting scene with several horsemen and two stags. There are numerous bronze objects: 40 pins, some of them swan-necked, a few bracelets and small rings, needles, fish-hooks, a razor, tweezers, double cone-shaped beads, buttons, and many other objects. Iron socketed celts, sickles, awls (one of them still in its bone handle), needles, a bridle-bit and pins have been found; as well as horn and bone awls, mattocks, large hammers with square holes for the handles, socketed spear-heads, tanged arrow-heads with

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barbs, smoothing-tools, etc. Wooden implements include swirling-sticks, pestles, two kneading-troughs, pine-bark floats for fishing-nets. The most interesting wooden objects are a primitive plough, a solid wagon wheel of Mercurago type, made of a single block of wood, with a square hole for the axle and two semicircular openings cut out on either side, strengthened by two strips let into the wood across the grain, an oak axle from a cart and three wooden gratings, one of them lined with wicker, which were doubtless used as hut doors. Other finds include blue glass beads, most probably imported from Egypt, various stone implements such as pentagonal celts, circular and triangular tools the purpose of which is unknown, but which may have been used to smooth earthenware vessels or to prepare hides, querns and grind-stones, clay implements for spinning and weaving, whorls and loom-weights, and clay toys. The numerous carbonized grains of corn, wheat, barley, millet, pea and vetch which have been found, and fibres of flax, point to the agricultural character of the population. The bones of domestic animals found show the importance attached to cattle breeding. Wild creatures are represented mostly by the stag and the hare, more rarely by the bear, and occasionally by the wild boar, the wolf, the fox, the beaver, the wild duck and the hawk. Fish-bones occur but rarely. Other occupations of the people are clearly illustrated by the discovery of clay moulds for casting necklaces, pins and the like. They are all of the so-called 'cire-perdue' type, that is to say the clay was plastered round the wax model, and after casting the mould had to be broken in order to get at the object. Such models have not hitherto been found elsewhere in Poland.

The excavations at Biskupin have given us for the first time a conception of the appearance of a complete prehistoric Polish settlement, and have thrown new light on the material and social culture of the Urnfield people of the Lusatian culture. Only a well-disciplined body of men under energetic leadership could establish such a settlement and build it according to a unified and well thought-out plan. It has sometimes been supposed that the Lusatian culture disappeared as the result of over-refinement and consequent decadence; but the discoveries at Biskupin give us a very different picture. The frequent occurrence of horn and bone implements on a site dating from a period of the highest development of the Lusatian culture, when bronze was beginning to be superseded by iron, offers a perfect analogy with the frequent use of horn and bone implements by the early historic Slavs—between A.D. 600 and 1000—who also raised similar

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strongholds and showed a similar tendency to settle on low-lying ground exposed to inundation. The most striking fact is that huts of identical construction are in use today over the whole area once occupied by the Lusatian culture, especially in Poland. There are some, indeed, quite close to our site, at Godawy, on the east bank of the lake of Biskupin and at Biskupin itself. A similar hut, dating from the late Middle Ages, was excavated in 1935 at Kcynia in the district of Szubin, and another, dating from the 17th or 18th century, at Ostrowo near Gebice in the district of Mogilno ; and it may be therefore supposed that the type has existed in Poland continuously from the Early Iron Age down to the present day ; if this is true it supplies one more proof of the Slavonic origin of Lusatian culture.

The complete examination of Biskupin will take several years, for the site covers over six acres, of which only one-third has so far been excavated. The best preserved portion, it is hoped, will be properly protected and kept as an object lesson for future generations. The archaeological expedition lives on the spot in a camp of its own, containing a workshop, a dark room for photography, rooms for drawing, etc. The whole site laid bare is mapped on a scale of 1:10 and several hundred photographs have been taken from ladders and from a balloon. The expedition has reconstructed two huts on the original plan, one of which serves as a museum, where the most interesting finds are exhibited.

Folk Culture

by IORWERTH C. PEATE

IN these islands we have been tardy in recognizing Folk Culture as an independent science. As the editor of FOLKLIV,* Professor Sigurd Erixon, states in his Foreword: 'It has long been leading a more or less dependent existence as an ambulating guest of certain related branches of science, which, thanks to the force of circumstances, were consolidated earlier. Generally it has been awarded a certain amount of space in archaeological, historical, artistic, geographical or philological publications. . . . The ethnologists of present times certainly recall that sponsorship and hospitableness with great gratitude. It is to be regretted however that there are far too many instances of ethnology not having attained such a development nor having become such a factor of education as it would appear entitled to'. This is regrettably true of the British Isles. As far as I am aware, there is no learned journal published here dealing exclusively with the problems of Folk Culture: with one exception, there is no department of Folk Culture in any of our national museums, nor is there a Chair of Folk Culture in any British university. The general rule in most museums is to make Folk Culture an appendix to archaeology and to exhibit miscellaneous collections of folk material under the unhappy and unscientific title of 'Bygones'. The one exception to which I have referred is the National Museum of Wales, which now has a Department of Folk Culture and Industries enjoying the same status as the other museum departments. The history of its establishment is pertinent to our present discussion. Since the foundation of the National Museum of Wales in 1907 Welsh folk material was collected under the enlightened sponsorship of its successive directors, the late Dr W. Evans Hoyle, Dr Mortimer Wheeler, and Dr (now Sir) Cyril Fox. This material was housed in the Department of Archaeology and first exhibited in a Gallery separate from the archaeological collections by

* FOLKLIV: review of Nordic and European Ethnology, vol. 1, 1937: four parts. Edited by Sigurd Erixon. Bokförlags Aktiebolaget Thule, Stockholm.

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Sir Cyril Fox (then Keeper of Archaeology) in 1926. In 1932 a sub-department of Folk Culture was instituted within the Department of Archaeology and in 1936 a separate Department formed. In the same year the Keeper of the Department was appointed Lecturer in Folk Culture in two of the constituent colleges of the University of Wales. Had these welcome developments taken place in the first instead of the third decade of the century, folk studies would have been greatly advanced. The period of the Great War and the years following saw a transformation in the life of the Welsh countryside which has made the work of the folk-culturist exceedingly difficult: were it not for the early enthusiasm of Mr T. H. Thomas, Mr T. W. Proger and Mr John Ward and their collaborators, for their despised collection of 'Bygones', that work, difficult as it is, would be well-nigh impossible. The moral is: let England and Scotland follow the example of Wales without further loss of time and opportunity, and give to the science of Folk Culture (well-served as it is in some regional English museums) national recognition. But museum recognition is not all. There are university chairs of Folk Culture in most north-European centres: Uppsala has its Gustavus Adolphus Academy for folk-culture research (*folklivsforskning*) which is responsible for the Journal under review. Indeed the northern countries have long recognized the fact that they only can speak with authority concerning their own cultural life. They do so through their universities, their museums and their open-air museums.

But what is Folk Culture? Professor Erixon devotes twenty pages of this volume to answer the question in a paper (in English) entitled 'Regional European Ethnology: main principles and aims with special reference to Nordic ethnology'. Stated briefly, the student of Folk Culture is concerned with Man himself, 'his mental or bodily functions and works' excluding animal functions and scientific research regarding the human body, which are the province of the physiologist, the medical scientist and the physical anthropologist. 'What is sought is objective knowledge of the material' associated with man's everyday life, 'and the actual conditions and functions attached to it' together with details of its origins, sources and distributions. In Wales, for instance, we are concerned with the culture of the Welsh people—in its domestic, social and spiritual aspects.

It is however the term 'folk' which causes most confusion. Swedish, in common with the other Nordic languages, has since ancient times an apt word for this, namely *allmoge*, which originally applied to

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all folk, the whole people, but ultimately obtained the special meaning of country folk and manual workers. Welsh too has the term *gwerin*, signifying the people in general but also having the special meaning of the Swedish word. English is more unfortunate. The word *folk*, as Fowler tells us, 'has passed out of the language of the ordinary educated person' and has been readmitted (imitated from the German) in such learned compounds as folk song, folk lore and folk culture. We speak however of *folk* culture rather than of *human* culture, as Erixon points out, 'due to the conviction that it is only by the study of human groups or by comparison between the individual and the group that this science can reach its goal'. The comprehensive significance of the term *folk* as contrasted with its late specialized meaning must therefore not be underestimated. One cannot deprecate too strongly the unscientific tendency—to use only a mild expression—of some writers to consider folk culture only as a study of the *vulgus in populo*, the 'lower stratum', the 'natives'—a term I have heard applied by an educated man to the Welsh country-folk in the same sense that he would speak of cannibals. Erixon, in this paper, disposes of the belief held by 'superior' enquirers that this 'lower stratum' compares unfavourably with the 'upper stratum'. We are familiar in these islands with the view that the peasantry is 'the party always receiving', the *vulgus in populo* always indebted to its social superiors. It is the view which for instance has made possible some of the absurd statements concerning the Norman keep as the *fons et origo* of our houses. Erixon is inclined—and the present writer agrees wholeheartedly with him—to abandon this 'upper' and 'lower' terminology and to speak of the lower stratum as 'a mother stratum characterized by associative reasoning, with a daughter stratum [the "upper"] bearing the stamp of a more conscious intellectual life [and] an intermediate stratum as well which acts as a link and has its foundation in civic affairs and business circles'. The upper- and lower-stratum psychology, states Erixon, is pure fiction. 'The creative forces belong to trade groups which are not usually to be found among the uppermost stratum of society, which on the contrary is of pronounced consumer type'.

Folk Culture, therefore, seeks to 'interpret and understand the community behaviour of human beings' in our own countries. One of the tragedies of our time is the fact that so many workers in the field of ethnology have 'counted only extra-European folk as objects of ethnological research'. The result has been to fill our anthropological journals with papers on the 'savage races'—in particular their

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sex life, a subject which seems to attract the curiosity of so many anthropologists. It has been argued that our 'outposts of Empire' are peopled by 'unhistoric' folk whose history must be written before it is too late. The truth is, of course, that European culture is quite as unhistoric: 'Europe is just as little systematically investigated or completely known. Historians often only get to the outer contours or penetrate certain special aspects. The only solution is to go to the living human beings themselves and let them and their conditions speak'.

The necessity of limitation, as Erixon points out, has led to these investigations having been directed hitherto mainly to the rural populations—a course justified by their historical importance, this being itself a result of their greater immobility and primitiveness and also the rapid transformation which modern conditions are effecting in the countryside. But Folk Culture must ultimately include the study of every class and element in the human community. The folk-culturist 'must take into consideration everything that possesses or has played a noteworthy role in community life or the habits of living'.

Tradition is the factor which maintains the link between those habits in present and past times. An important task, therefore, is to analyse 'the life and activity of tradition as the shaper and maintainer of the social system'. A civilization endures—that is the task of tradition—but it is not immutable and Folk Culture has to examine and sift those changes due to transmissions from other groups, to loans from other culture circles and to innovations of an individual nature.

How, therefore, should the folk-culturist work? He proceeds from the externals inwards. He deals with the material manifestations of culture but does not overlook the spiritual. The working of the folk mind expressed through lore, custom, religious institutions, etc., is an integral part of the subject. 'The products of man's physical actions are the expressions of physiological and psychic functions in conjunction'. And so the student of, let us say, Welsh culture is concerned both with the Welsh expression of a European material culture, supernatural in its bases, and with the spiritual aspect of culture, national or regional in essence, exemplified by language and other expressions of the mind and spirit.

I have dealt at some length with Professor Erixon's paper since the general principles of Folk Culture need elucidation at the present time. This volume, however, includes several papers which throw light on many aspects of the subject. It is gratifying to record that FOLKLIV has adopted German and English as its media of expression, and all

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papers are printed in one or other of those languages. This is useful since FOLKLIV is intended to serve as a Journal of Folk Culture for the whole of north-western Europe. It is indeed for folk culture what ANTIQUITY is for archaeology and the excellence of its production can only be compared with that of ANTIQUITY. The full-page plates deserve special commendation.

Among the English papers may be mentioned 'The North-European Technique of Corner Timbering', 'Some primitive constructions and types of lay-out, with their relation to European building practice' (both by the Editor), 'The Ancient Settlements in Finnmark, Norway' (by Halvor Vreim) and 'Notes on the Irish House' (by Dr Ake Campbell, Uppsala, to whom folk-culture studies in Eire owe so much). Erixon's study of primitive constructions is an invaluable contribution to the study of house-types and building technique. (I have one small criticism: figure 18, a farmhouse near Strata Florida is printed as 'after Addy' whereas it first appeared in *Archaeologia Cambrensis*.)

The papers in German include a discussion of the origin of the Lapps by Wiklund, the antiquity and origin of the north-Swedish corn drying screens by Ragnar Jirlow and a report on the cultural history of camouflage-methods of hunting in Sweden by Lagercrantz. In addition there are short notes and book-reviews. In the past ANTIQUITY has given the hospitality of its pages to several papers on houses, transport and kindred subjects which are outside the field of archaeology proper. We welcome the publication of FOLKLIV as a companion to ANTIQUITY. Both are indispensable to the student of anthropology in its broadest sense and it is to be hoped that FOLKLIV will achieve for folk culture what ANTIQUITY has already accomplished with such distinction for archaeological studies.

The Hercules Myth—beginnings and ends

by STUART PIGGOTT

THE simple, good-hearted strong man is a character perennially popular, and at times has become almost a national ideal. We sophisticates of today do not so obviously deify our expression of the desirable qualities as did our forefathers ; but we can at least appreciate the mixture of endearment and reverence with which the heroic demigod who appears as the Herakles or Hercules of classical myth was regarded. The combination of the rather likable human failings of an enormous appetite and a naïf boastfulness with the godlike gifts of super-human strength and fortitude in adversity produced an eminently credible deity, someone to whom alike the timorous maiden might pray for protection, the bluff soldier for understanding support in a punitive raid—in fact a combined apotheosis of Tarzan and of Bulldog Drummond. Such is the Hercules we see in the classical pantheon, Hercules at the height of his glory. But, as Mr De la Mare has said, it is the edges of things that are the most interesting. What of the edges of the Hercules myth ? Where and when did it first crystallize out from the cloudy mixture of primitive man's thoughts, and what forms did it take after Christianity had driven away the old gods to a hole-and-corner existence in folklore and old wives' tales ?

The origin of Hercules has recently been studied by Miss Levy¹ in the light of certain scenes depicted on cylinder seals from Tell Asmar. The best of these (PLATE I) is Akkadian, of c. 2500 B.C., and in it we see a hero attacking a seven-headed monster, four of whose heads hang limp and wounded while the other three rear menacingly and thrust out forked tongues. Another impression from Tell Asmar shows similar scenes, with an adversary with five heads, of which two have been severed, and finally on another seal the same god-hero is standing with a group of vegetation-deities, and holds lion-skin, club and bow.

'Old stories tell, how Hercules
A dragon slew at Lerna
With seven heads and fourteen eyes'—

This must be the oldest story of them all.

¹ G. Rachel Levy, 'The Oriental Origin of Hercules', *Journ. Hellenic Studies*, 1934, LIV, 40-53.

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Frankfort considers that the representations are of 'events chosen from the cult of the local God of Vegetation' whose temple was excavated at Tell Asmar in 1932-33, when evidence was found suggesting a deity who combined solar and chthonic elements with the attributes of fertility inevitable to a vegetation-god. These same elements Miss Levy demonstrates to have been present in the classical Herakles; his human attributes (*e.g.* the labours) seem to date from pre-Hellenic times, while later he appears as an ancestor of humans in the pedigrees of the Dorians and the Lydian kings. She would see evidence of his fertility associations in the legend of his marriage with the fifty daughters of Thestios, equating this with the *ιέρως γαμος* represented on a plaque from the Tell Asmar temple, and quotes the unequivocal evidence of the Orphic Texts in this regard.

Most important however is the story of his death on a burning pyre on Mount Oeta, for this immediately suggests comparison with Melkart of Tyre and, most significant, Sandas or Sandan of Cilicia, who appears on the coins of that city interchangeable with Herakles as the tutelary deity, while various late ancient writers equate the one with the other, especially Berosus with his *Σαινδην δε τὸν Ἡρακλέα*. This identification of Herakles with Sandas is of some importance in tracing the movement of the idea of the Herakles-myth from Sumer to Greece; for in the precise geographical region to which we might most hopefully turn, Asia Minor, there occurs, at Boghaz-keui, a bilingual Luvian-Hittite text in which the ideogram for Marduk is translated as Sandas. Following Götze, Miss Levy would associate the Luvians (having Sandas as their chief deity) with the makers of *Urfirnis* ware and the users of names in *-νθ* and *-σσ* roots, equating them in Asia Minor with the Troy-Yortan folk and names in *-nd* and *-ss*.

We cannot here trace the Herakles-myth in other regions, but Samson immediately comes to our mind, as the strong but simple hero obviously cast in the Herculean mould, and Virolleaud² has drawn attention to the strong hint of a Hydra-myth in the reference in Psalm 74, 13-14—'Thou didst divide the sea by thy strength; thou brakest the heads of the dragons in the waters. Thou brakest the heads of leviathan in pieces, and gavest him to be meat to the people inhabiting the wilderness'. The dragon-slayer is eternally a popular hero, from the Spearer of Apep to More of More-hall.

I shall now turn to another edge of the Hercules story—an edge

² *Syria*, 1931, XII, 356-7.

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geographical rather than chronological, for I propose glancing at certain points in connexion with the worship of the god, not in Rome, but in the remote province of Britain. So far as can be judged from the evidence of sculptures and inscriptions, Hercules as worshipped in Gaul differed in no way from the classical model, even if he did sometimes replace a native hero-god of similar attributes, save only in the mysterious Hercules Ogmios, for whose existence Lucian is the sole authority. Ogmios is a feeble decrepit old man, wrinkled and bald—and no strong silent monster-slayer but a master of sweet speech and subtle words, depicted, says Lucian, with his listeners chained by the ears to his tongue.³ How he comes to be associated with Hercules must remain a mystery.

In Britain the worship of Hercules (save for one particular cult to be mentioned below) appears to have played, generally speaking, no greater and no smaller part than that of the other deities of the Roman pantheon who were either accepted for what they were or assimilated to native godlings of similar attributes. Representations of Hercules and the Hydra occur—on altars, as that from Whitley Castle (PLATES II–III) or in more entertaining form, on the sherd of Castor ware from Welney illustrated in *ANTIQUITY*, 1936, x, 94 and pl. III. Small crude bronze figures also occur, and a group of these has recently been studied by Dr Fritz Heichelheim,⁴ who would see in them evidence of the cult of the Emperor Commodus as Hercules Romanus. The circumstances of the establishment of this cult may be here briefly reviewed in parenthesis. As I have said, the popularity of Hercules was as a domestic god with very human attributes, and as such he plays an important part in the religion of the Roman emperors, and from time to time the more megalomaniac had sought to establish a Hercules cult and to identify themselves with the god. Caligula and Nero both made this attempt, the latter with some success; but the Antonines contented themselves with a more philosophical outlook, in which they became the protégés of Hercules, each personifying in a vague manner some suitable aspect chosen from the god's accommodatingly large range of attributes. Commodus, however, adopted not only the whole Antonine tradition, but, reverting to the aspirations of the earlier emperors,

³ For the Gaulish Hercules see J. Toutain, *Les Cultes païens dans l'Empire Romain*, III, ch. iii.

⁴ Fritz M. Heichelheim, 'On some unpublished Roman bronze statuettes . . .', *Camb. Ant. Soc. Procs.*, 1937, xxxvii, 52–67.

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at the end of 191 declared himself as an incarnation of Hercules and a fit object of adoration.⁵

In England the most definite and important evidence of the Hercules-Commodus cult is the well-known bronze sceptre in the form of a club surmounted by a bust of Commodus, from the Willingham Fen hoard;⁶ and arguing (I think rather too confidently) from this, and from the distribution of the Hercules statuettes in East Anglia, Dr Heichelheim identifies three possible centres for the practice of the cult in that region, the most important being in the neighbourhood of Cambridge. It is in connexion with this last area that he puts forward an interesting suggestion that I propose developing at some length.

The suggestion is with regard to the Gogmagog Hills that lie to the south of Cambridge, crowned by the hill-fort of Wandlebury and the 18th century mansion of the Godolphins, the making of the grounds and outbuildings of which largely destroyed the earthwork. Now, while the gigantesque name of the hill is not recorded before 1574,⁷ since the early 13th century at least it has been associated with the legend of a giant, challenged in the dark by a knight who, victorious, carries off the giant's horse which later (as is the way with nightmares) vanishes.⁸ Here then we may have a folk-memory of a hill sanctuary of Hercules, and Dr Heichelheim calls in as a witness the figure of a giant cut on the slope of Wandlebury's rampart, which he considers ancient. Alas! this 'high and mighty portraiture of a giant', as was pointed out in these pages last year,⁹ was cut by the 'schollars of Cambridge' some time before 1640, and cannot itself be cited as evidence. Nevertheless, as we have seen, there was an earlier giant legend about the hill, and the sportive undergraduates were in effect giving pictorial reality to an oral tradition which might well enshrine a dim recollection of Roman times.

To the minds of many readers there must by now have occurred the same thought—what of the Giant of Cerne? Can he be a representation of what Stukeley called 'our high admiral Hercules'? (Stukeley had no doubt but that he was). There seems good reason for thinking that such is almost certainly the case.

⁵ Cf. M. V. Taylor and M. Rostovtseff, 'Commodus-Hercules in Britain', *Journ. Roman Studies*, 1923, XIII, 91-109.

⁶ Fox, *Arch. of Cambridge Region*, 214-15, with refs.; *Ant. Journ.*, 1926, VI, 178.

⁷ *Camb. Ant. Soc. Procs.*, 1911, XV, 53-62.

⁸ The story is recorded by Gervase of Tilbury in his *Otia Imperialia* of c. 1211.

⁹ *ANTIQUITY*, 1937, XI, 104.

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Above the village of Cerne Abbas, remote in a lonely valley of the Dorset hills, there is, carved through the turf to the white chalk rock, a giant whose portraiture is high and mighty indeed, standing as he does 180 feet high from top to toe, and brandishing a knotty club which adds 35 feet to the total representation. His left arm is held out and is now empty, but a suspicious irregularity and slight mound below his hand suggests a pendant object of indeterminate shape. He is drawn with crude naturalism, and is markedly phallic.

To the classical 18th century there seemed little doubt that he was Hercules, but to a more romantic 19th, Baal Durotrigensis seemed a more appropriate title, while his phallic attributes caused dark hints to be thrown out of secret rites and nameless orgies. Sir Flinders Petrie surveyed the Giant accurately in 1925,¹⁰ but unfortunately essayed a Bronze Age date for the figure on evidence that was shown to be entirely groundless by Mr Crawford in these pages.¹¹ Since then no serious contribution to the study of the figure has been made.

As with the other hill-figures, we are left with stylistic grounds as our dating criteria for the Giant, save for a glimmer of light from a curious philological source which will be discussed below. The most obvious point is the naturalism with which the figure is treated, in which it stands in striking contrast to the Uffington White Horse, which seems to display the same art-tradition as the non-representational 'Late Celtic' style. At Cerne however we have the clumsily naturalistic yet lifeless convention so characteristic of Romano-British art, and, equally characteristically, the inanimate club, with its bold wavy outline, is the most successful and lively part of the picture. We have a representation of a great hero, with the attributes of club (and perhaps the lion-skin) who is also conspicuous in his display of virility and generative powers. If the instance of Wandlebury may be cited (and I would do so with all reserve) we have a possible precedent for a country hill-sanctuary of Hercules, and perhaps one due to the revival of the cult by Commodus. I feel it almost inevitable that the Giant of Cerne must be Romano-British, and that it may possibly date from the years immediately following 191.

Before leaving the Cerne Giant, I would draw attention to the curious little earthwork on the hilltop immediately above the Giant, locally known as the Frying-Pan. Mr Crawford has compared it to a type of prehistoric earthwork enclosure common to the downland and

¹⁰ *The Hill Figures of England* (Royal Anthropol. Inst. Occ. Papers no. 7).

¹¹ *ANTIQUITY*, 1929, III, 277-82.

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probably mainly of Late Bronze Age or Early Iron Age date ; but it has certain curious individual features, the most noticeable being that its interior is carefully and deliberately levelled on the hill-slope, in such a way that there is a considerable drop from the rampart to the inner area on the uphill side, but on the downhill edge it is virtually ' lynched ' on the slope. (The inner bank, made in connexion with 19th century tree-planting, confuses this feature and must be ignored). There seems at least a possibility that we may regard this enclosure (in which until the last century the maypole was annually set up), as that of a primitive temple of the cult : the native version of the hill-top temples of Chanctonbury, Maiden Castle or Lydney. Excavation alone can help us further.

It would indeed be remarkable if so dominant a mythological figure as Hercules, and one so peculiarly a god of the common people, should leave no trace on the folklore and traditions of post-classical Europe. In point of fact we can trace the Hercules myth along several curious by-paths in literature and popular legend to the present day. The purely literary and the popular threads of the story are at first interwoven, but by the end of the Middle Ages had separated to a great extent. We may best start by considering the purely literary aspect.

In classical mime and drama up until at least the 6th century Hercules was a stock comic figure,¹² his gluttony and boorishness forming an easy target for simple humour ; and when in the 16th century the Italian Comedia del Arte was becoming a formalized stage show, among the characters ultimately derived from classical sources we can recognize Hercules, for he, slim and etherealized, his club transformed to a lath, is none other than Arlechino—the Harlequin of our 19th century Transformation Scene and Pantomime.¹³ Philologically his name is a metathesis from a diminutive Herculinus=Herlechinus=Harlequinus, and indeed it appears that there was no doubt of his identity in the minds of the intelligentsia of the 16th century, for in the course of a singularly undignified theological controversy of 1592 one writer, descending to the personalities that seem to have come as easily to learned disputants of that time as to fourth-form schoolboys or Members of Parliament today, expressed his opinion that his opponent's intelligence was roughly on a level with that of the clown who played Hercules or Harlequin in a farce—' ut luderet personam Herculis vel Harlequini in comoedia '.¹⁴

¹² Cf. Allardyce Nicoll, *Masks, Mimes and Miracles* (1931), 269

¹³ Otto Driesen, *Der Ursprung des Harlekin* (1904).

¹⁴ Driesen, p. 169.



IMPRESSION FROM AN AKKADIAN CYLINDER-SEAL (c. 2500 B.C.) SHOWING A HERO SLAYING A SEVEN-HEADED MONSTER. FROM TELL ASMAR (see p. 323)
(After Frankfort, *Iraq Excavations of the Oriental Institute of Chicago*, 1932-33, fig. 43)

PLATE II



HERCULES AND THE HYDRA ON AN ALTAR FROM WHITLEY CASTLE (see p. 325)

ph. R. G. Collingwood

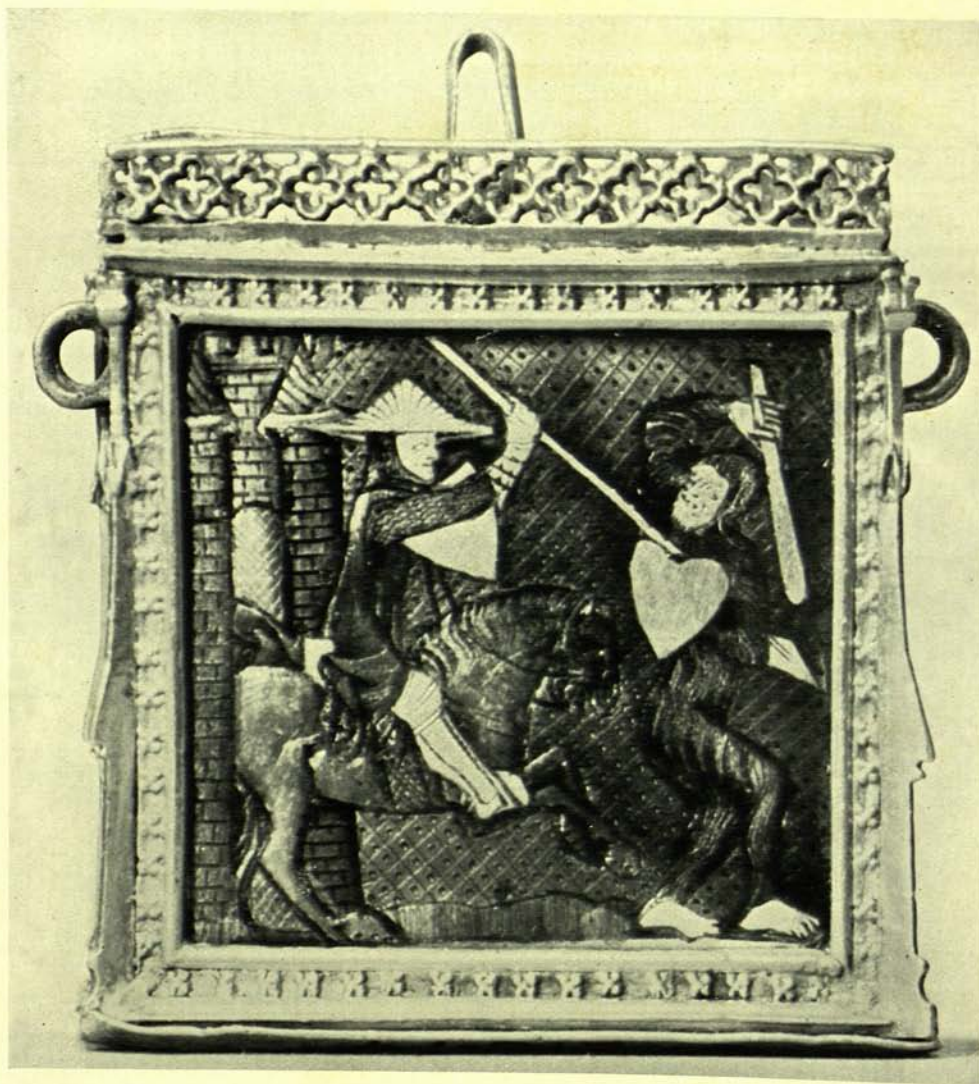
PLATE III



HERCULES AND THE HYDRA ON AN ALTAR FROM WHITLEY CASTLE (*see* p. 325)

ph. R. G. Collingwood

PLATE IV



THE WILD MAN ATTACKED BY A KNIGHT (*see* p. 331)
English enamel, mid-xiv cent. (Victoria and Albert Museum)

THE HERCULES MYTH—BEGINNINGS AND ENDS

Nimble, elusive, fantastic, Harlequin delighted and amused the Renaissance courtiers, but in European folk-legend Herlechinus had played a far grimmer and more terrifying part since at least the 11th century. It seems that the attributes of Hercules that persisted in the minds of the people were not the heroic dragon-slayings (usurped perhaps by St. George), but his character of god of the underworld—those chthonic features which Miss Levy showed to be of importance in his earliest manifestations in the Orient. He retains his club in his capacity of a god of the Old People (Dr Mahr would say the Mesolithic folk !) and he is the leader of the underworld, the huntsman of the demon hunt.¹⁵

In the year 1091, Ordericus Vitalis recounts, a priest Gualchelmus of St. Aubin-de-Bonneval near Lisieux, set off one night to visit the sick at the far end of his parish, and on his way hears a sudden noise and is about to run away when he is commanded to stay by a spectral club-bearing giant leading a troupe of ghosts—' Verum quidam enormis staturae, ferens ingentem maxucam, presbyterium properantem praevenit, et super caput ejus levato vecte dixit : Sta, nec grediaris ultra '. The story continues at some length, recounting how Gualchelmus recognized deceased parishioners among the ghostly horde, and how he tried to steal a spectre-horse (which vanished, as at Wandlebury) ; but of greatest importance is his recognition of what he saw as the followers of Herlechinus—' Haec sine dubio familia Herlechini est ' he thinks to himself.¹⁶

Through the literature of the Middle Ages we have recurrent glimpses of this same belief, with its main character in variant but easily recognized forms of the Hercules-name. He leads an army—the ' milites Herlewini ' of Pierre de Blois in the 12th century, and the army takes his name—' phalanges noctivagae quas Herlethingi dicebant ' as Walter Map writes in the same century, confusing the Hunter with his Hunt, Herle with his Kin. By the 13th and 14th centuries, ' la mesnie Hielekin ' was common form in French for a devilish rout, and Hellequin or Hernequin was a general term for a devil, although side-by-side there persists through to the 16th century the original idea of the demon hunt.¹⁷

¹⁵ This aspect has been studied by Gaston Raynaud, *La Mesnie Hellequin*, in *Études romanes dédiées à Pierre Paris* (1891).

¹⁶ Ordericus Vitalis, *Historia Ecclesiastica*, ed. le Provost (1845), III, bk. viii, esp. pp. 368, 371.

¹⁷ For references to these quotations see Raynaud, *passim*.

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At this point we may turn again to England. In passing I may mention Herne the Hunter,¹⁸ who although he has lost the club and donned the 'great ragg'd horns' of his fellow-god of the underworld, Cernunnos, is nevertheless in the Hercules-Hernequin series. But we must go back to Cerne. There seems no reason for doubting the historicity of the incident recorded in all the lives of St. Augustine, in which he was sent to Cerne on a special mission to stamp out the pagan cults at that place. The story is well known and I have already commented upon it in ANTIQUITY,¹⁹ but I must briefly repeat here the collateral points I made at the time. In Walter of Coventry's 13th century version of the story (otherwise verbatim from William of Malmesbury) there is interpolated the phrase 'in quo pago olim colebatur deus Helith' after the mention of Cerne and other Dorset religious houses, while Stukeley in the 18th century states that the local people 'give the name of Helis' to the Giant. This Helith-Helis name I connected with the Herlequin-Helethkin legend, suggesting that at all events the Giant was identified with a form of Hercules in the Middle Ages, and this may represent a true folk-memory.

The club-bearing demon of the Miracle Plays survives in the odd character in the Christmas Mummers' Play. Beelzebub, who usually appears at the end of the performance with other 'supernumerary' characters introduces himself in some such words as:—

' Here comes I, Beelzebub,
Under my arm I carries my club,
And in my hand a frying-pan—
Don't you think I'm a jolly old man ' ?²⁰

To suggest any real connexion with the Giant of Cerne or with Hercules would be fantastic—but the people of Cerne may have had him in mind when they named the earthwork above the Giant 'The Frying-Pan'.

There is a final thread to follow in the multi-coloured skein. In the medieval Bestiaries we find a constant figure—the Wild Man, shaggy and club-bearing, virtuous and a slayer of monsters. Druce²¹

¹⁸ He is known solely from Shakespeare's ref. to him in *Merry Wives*, IV, iv, 29 ff., but seems to represent a genuine folk-tale.

¹⁹ 1932, VI, 214–16, with references.

²⁰ Cf. E. K. Chambers, *The English Folk-Play* (1933), 65, and my remarks in *Folk-Lore*, XL, 193.

²¹ G. C. Druce, 'Some Abnormal and Composite Human Forms in English Church Architecture', *Arch. Journ.*, 1915, LXXII, 135–86.

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(very rightly) identifies him with Hercules, pointing out that he never becomes a demon, but always remains human. Then, in the first half of the 14th century he is suddenly conventionalized in art as the 'woodwose' of heraldry—naked and hairy, club-bearing and usually represented as combating a lion or a dragon (PLATE IV). He becomes popular, and by the Renaissance is a frequent figure in masques and processions (as that before Elizabeth at Kenilworth in 1575). And for a last glimpse of Hercules—the god and hero, the Demon Hunter and the sprightly Fool—we can see him as the Cynic, in Campion's Masque before Queen Anne in 1613,²² who appeared to the Queen 'out of a bower, drest in a skin-coat, with bases, of green calico, set thick with leaves and boughs : his nakedness being also artificially shadowed with leaves, on his head he wore a false hair, black and disordered, stuck carelessly with flowers'. Before long, he is 'conquered by Reason' and goes off saying (rather dejectedly?) 'henceforth my heart shall honour greatness, and love society ; lead now, and I will follow, as good a fellow as the rest'. 'As good a fellow as the rest'. The ultimate surrender of the individual to the mass.

²² J. Campion, *Songs and Masques*, ed. Bullen (1903), 179 ff.

The Prehistoric Craniology of Britain

by W. W. HOWELLS

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THE racial prehistory of Great Britain, while incomplete, has been brought to a provocative stage in its reconstruction. What follows is an attempt to set forth the framework of present knowledge, with its major lacunae, for the particular scrutiny of the archaeologists, on whom the anthropologists must largely rely for the testing of its stresses and strains.

Significant additions to this framework call for more material: more skulls for which the archaeological setting is perfectly known. This necessity, and the reasons behind it, have already been well stated by Miss Tildesley,¹ and it is to be hoped that her plea will prosper. The importance of the largest possible bodies of crania should be obvious; but judging from the frequency with which a craniologist is asked to expatiate upon a racial type represented by a single skull, the reasons may well be restated in simple terms. The apparent hoggishness of the physical anthropologist, which he himself terms a quest for 'statistical reliability', is the product of two desiderata. In the first place, the larger the number of crania included in an average, the more surely is that average representative of the population; this is axiomatic. The second objective, equally important but not widely comprehended, is concerned not with the average but with the behaviour of the individuals in making up that average. In other words, whether the mean cranial index be 70 or 80, the manner in which the individuals mass about this mean is an independent and important character of the group. The measurement of this dispersion is the standard deviation, which requires a larger number of crania to be moderately reliable than does the average. It is not the whole truth to say that the standard deviation measures the degree to which the members of a series resemble one another: its greater usefulness lies in the fact that for all settled and generally endogamous human groups the degree of variation, or the appearance of the 'normal curve', is much the same. To take a concrete example we may anticipate our subject-matter: the widest difference between the Neolithic and Bronze Age crania of Great Britain lies in the shape of the head, yet an individual skull with

¹ M. L. Tildesley, 'Bones and the excavator'. *Man*, 1931, XXXI, 31, no. 112.

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an intermediate index of, say, 77, may be regarded, as far as head form goes, as being a wholly normal member of either group. The distribution of the whole group under investigation must therefore be established, and a range of variation, or standard deviation, which is above the average size may be regarded as the strongest possible indication that the group in question is not a normal one;² not as it were even a hybrid nation, but a shuffling together of different nations, which is a crime against all craniological method.

These considerations demonstrate the necessity for sufficient crania for statistical analysis and presentation. Such treatment reduces the scope of the problems in hand, eliminates confusion and affords the only plausible basis for general intelligibility among interested students; when, on the other hand, small numbers of skulls must be depended upon, the worker must rely largely on descriptive methods and personal impressions, which are difficult to communicate and poor material from which to draw conclusions.

The only application of the statistical approach to British prehistoric material has been made by Morant in a study³ which stands as the authority for the general metrical features of the early crania. By assembling the scattered published data on Neolithic, Bronze and Iron Age skulls and treating them in the mass, he was able not only to determine more exactly than heretofore the mean cranial type of various periods or localities but also to show satisfactorily that these groups had the characteristics of other normal groups and therefore may be presumed to be authentic types. The descriptions which follow are largely based on his findings, which are corroborated by other material as well. For details of Morant's statistical processes and for all sources of material except the most recent, the reader is referred to Morant's original paper.

The succession of changing types of crania, as they are known, corresponds closely with the archaeological divisions, *i.e.*, the Neolithic, Bronze and Iron periods. Actually, the body of identified material is

² More exact tests, based upon the standard deviation, may be performed upon a group of crania to determine the homogeneity of its composition. The standard deviation is likewise the basis for all determinations of the likeness or unlikeness of two series.

³ G. M. Morant, 'A first study of the craniology of England and Scotland from Neolithic to early historic times, with special reference to the Anglo-Saxon skulls in London museums'. *Biometrika*, 1926, XVIII, 56-98. See also B. G. E. Hooke and G. M. Morant, 'The present state of our knowledge of British craniology in late prehistoric and historic times'. *Biometrika*, 1926, XVIII, 99-104; A. Keith, 'The Bronze Age invaders of Britain'. *Jour. Royal Anthropol. Institute*, 1916, XLV, 12-22.

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gathered into two chronological groups, one belonging to late Neolithic and early Bronze times, and the other to late Celtic and Roman times, with a great hiatus between them covering the late Bronze and early Iron Ages from which very few skeletons remain, the bulk having been destroyed by cremation at burial. Therefore we may clearly distinguish the characteristic cranial form of the Neolithic, and the effect upon it of the arrival of the equally characteristic but contrasted type of the Beaker People ; we may also form an as yet incomplete but distinct image of the prevailing late Iron Age type, which exhibits a considerable variety ; but as to possible genealogical connexions across the period of cremation we have little or no direct evidence. In other words it cannot be established precisely how far the Iron Age and the later populations of Great Britain were derived from that of the Bronze Age.

The crania of the Neolithic, mostly from Long Barrows, form a homogeneous type clearly defined in its character. It was above all strongly dolichocephalic with an average cranial index of 72 or less, and the skull was long in the absolute sense, the mean length of 193 millimetres or more being a very high figure. The nasal aperture was exceptionally narrow. These characters are constant in any of the published groups of Neolithic skulls, as well as being the main features of the inclusive Neolithic series assembled by Morant. Other features of the type, from Morant's series, are a medium head height and a narrow and short face, though some of the material indicates that the head may have been a few millimetres lower and the face an equal amount broader.

The homogeneity of the population is apparent not only from the uniformity of the various data. Morant also shows that there was no perceptible difference between the Neolithic crania of England and Scotland (nor do the few Irish crania appear to diverge), and when he pooled all the material regardless of provenience he obtained standard deviations and curves of distribution of an order typical of a single homogeneous community.

There is no reason to believe that future discoveries will modify in any important way these present conceptions of the Neolithic type and its racial unity, and they may therefore be accepted, as far as they go, as established. It nevertheless remains highly desirable to accumulate more data, either through fresh finds or by reworking material already excavated, in order to investigate any possible local variation in type, and the size and distribution of the population, and to determine more precisely the question of the true average height of the head and

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breadth of the face, since these have an importance in relation to later types.⁴

Although the crania representing the early part of the Bronze Age are superficially ambiguous, there is no difficulty in understanding the true nature of events. A new physical type arrived, that of the Beaker People,⁵ which differed considerably from the Neolithic inhabitants, particularly in being brachycephalic and broad-faced. It is probable that the Neolithic population was not a large one, and that the Bronze Age type came in considerable numbers; at any rate the two forms met and to a certain degree amalgamated. There is every evidence that the meeting, in some regions at least, was amicable, for the two types may be found buried together in the same group of barrows.

In regard to the actual discoveries of the Early Bronze Age the situation is as follows. Several small series of twenty to thirty skulls are available, each of which derives from one locality or group of barrows, and these series fall into two classes. In one type the series is homogeneous, and the average cranial index is high, so that these groups apparently approximate the type of the Beaker People proper. Other series, found in Yorkshire, are patently heterogeneous, and the average measurements fall between those of the Neolithic and Bronze Age people, so that plainly both of these types are present, and from the behaviour of the standard deviations they appear to be present in pure as well as blended forms.

This intermingling and coexistence of the two types would be apparent to a student of morphology, but to demonstrate the fact beyond question it is necessary to use statistical analysis. Now in the brachycephalic series presumed to represent the Beaker People in a

⁴ In order to have the benefit of the largest possible number of skulls, Morant included in his Neolithic series a number of crania resembling the Neolithic physical type, but of Bronze Age date. These he selected from the Bronze Age material by a mathematical process for which the reader must be referred to the original paper. While the author agrees entirely with Morant that such individuals of the Neolithic race were present in the Bronze Age, he feels that the method by which they were segregated by Morant may have affected his total 'British Neolithic' series, in which they were incorporated; *i.e.*, the variability of the latter may have been artificially reduced, and it is possible that the average figures for basion-bregma height and bizygomatic breadth are too high and too low respectively. There is therefore the greatest need for sufficient crania of unquestioned Neolithic date.

⁵ Archaeological opinion doubts that the Beaker People actually introduced bronze into Britain, but in dealing with physical form the terms 'Beaker People' and 'Bronze Age type' may be used synonymously.

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pure form, the range in various measurements and the standard deviations denote a normal homogeneous group. In the case, however, of series where the Neolithic type is also present the same features show an internal variation which from all other evidence is biologically impossible in any established community, whether this be pure or hybrid in its racial origin.⁶

Morant's solution of the problem proceeds on this theory. When all of the Early Bronze Age crania are taken together, the cranial index of the whole is found to extend from a long-headed extreme of about 64 to a round-headed extreme of about 90 or more, the standard deviation being very high. Now it is impossible to suppose that the Neolithic type, the Beaker type, or any other type could produce such extreme individuals by itself, or even that a mixture of the two, after inbreeding for a few generations, would produce such wide extremes. It is only possible to interpret the data by assuming, as Morant does, that the Bronze Age material is made up of a pure Neolithic element (of which the cranial index would extend from 63 to 81 at the most), a pure Bronze Age element (with an index extending probably from 73 to 91) and hybrids between the two. Morant's method was, briefly, to remove from the whole Bronze Age series those crania whose measurements showed them to be of the Neolithic type, or most like it, continuing the process until the residue approximated, in a statistical sense, a normal group whose highest cranial indices were just over 90.

It may be supposed that the series thus obtained reconstructs the original type of the Bronze Age invaders as faithfully as possible. It closely resembles a homogeneous series of Round Barrow skulls from Derbyshire, which probably contains none of the Neolithic strain. The Bronze Age immigrants may therefore be described as follows: the skull was brachycephalic and very large, with a mean index of 81 or 82, and the face and nose were broad, so that in all these features there is a wide difference from the Neolithic cranium. The head height seems to have been much the same, however, and by reason of the general poverty of material it is difficult to say what the characteristic lengths of the face were in either case. On the whole, however, we have the same certainty as to the general type as in the case of the Neolithic race, and the probability that there was no great variety among the invaders, although the Scottish skulls indicate that here the Bronze Age people differed somewhat, being even more brachycephalic. The

⁶ See W. W. Howells, 'The Iron Age population of Great Britain'. *American Jour. of Physical Anthropology*, 1937, XXIII, 19-29.

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question of such variation, if any, throughout Britain, and the necessity of knowing to what degree, and where, intermixture with the Neolithic people occurred, call for the widest possible recovery of cranial material.

The known crania of Iron Age and Roman times are far less amenable to interpretation than those of the earlier periods. It is not yet possible to convey a clear general impression of a type or types. Most of the material is in small groups, and is often dubious as to origin or methods of presentation (see Morant); such fortunate occurrences as massacres and well-filled cemeteries are rare. The best which Morant was able to do was to assemble a series composed of several smaller published groups which did not differ from each other statistically, and to exclude those few groups which diverged, or seemed for some reason untrustworthy. This gave an Iron Age series which represents south-eastern England and Scotland. The most important features exhibited by the series are the lowness of the skull vault (133 millimetres) and the narrowness of the face (131 millimetres), both averages falling below those of the Neolithic and Bronze Age types; aside from this the cranium is long to medium, with an index of 75.

The objections to this Iron Age series are the unevenness of the material included in it, and the fact that so much must be excluded. Morant detected different types among the few crania from other parts of the country. Furthermore, several of the local groups, representing single communities, do not have the low heads and narrow faces of the general series. There are not, as was said, any large series of strictly Iron Age date, but there have recently come to light two sizeable series which may be regarded as of pure Iron Age ancestry. These are an Early Christian Irish series (Gallen Priory),⁷ and a series from Dunstable Downs, Bedfordshire.⁸ Both groups have heads of medium height, and medium to wide faces; furthermore, the cranial indices of both are higher than that of Morant's series and of many of its component groups. The Dunstable series has the highest index, with concomitant differences in the measurements of the cranium. In their general features, both series lie between the Neolithic and Bronze Age types.

To sum up, Iron Age remains allow us to say little that is

⁷ Howells, *op. cit.* The paper referred to constitutes a preliminary report on the material, which was excavated by the author as a part of the Harvard Anthropological Survey of Ireland.

⁸ D. Dingwall and M. Young, 'The skulls from excavations at Dunstable, Bedfordshire'. *Biometrika*, 1933, xxv, 147-157. [The series from the Maiden Castle cemetery is likely to provide even more valuable material when it has been studied. ED.]

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definite about the population. It will probably become more apparent in the future that there was considerable local variation in type, although in general character the various known groups are just dolichocephalic or mesocephalic, and medium in head height and face size. By and large these groups are intermediate to the Neolithic and Beaker People types. It is probable that in southern England there were the special characters of a low head and narrow face, as Morant's series indicates ; but this series may have been influenced in these directions by the small Scottish skulls and by several southern groups of an unsatisfactory character.

The relatively abundant crania of the Anglo-Saxons⁹ delineate a consistent type which somewhat resembles that of the Iron Age people, differing from it mainly in having a higher cranial vault than any type heretofore and in being dolichocephalic. The homogeneity of all Anglo-Saxon material so far reported is high. In many measurements the Anglo-Saxon type, like the Gallen Priory series, is intermediate to the Neolithic and Bronze Age types, and Morant suggests (p. 81) : ' There may be something to be said for the hypothesis that the Anglo-Saxon invaders of our shores were originally related to two contrasted racial types which were akin to the ones found in England in the late Neolithic and Bronze Age respectively, the Neolithic element predominating '.

Finally, it is necessary to describe, among recent crania, the three large series of 17th century London.¹⁰ These form a single type (not necessarily that of other recent series) whose importance here lies in its great resemblance to Morant's Iron Age series of southern England (and Scotland), particularly in the low head and narrow face. This resemblance adds to the probability that Morant's synthesized Iron Age type is authentic and furnishes ground for believing that the Iron Age type is the fundamental one giving rise to the present population of England with little or no influence from the Anglo-Saxons.

The above description outlines the present body of fact from which the connexions of the prehistoric and the historic inhabitants may be judged. Until, however, this body is considerably increased, interpretation of its significance will naturally be varied.

The Neolithic people can arouse no differences of opinion. The homogeneity and universality of the race are beyond question, and its measurable features are constant and characteristic. The type of the

⁹ Reports in *Biometrika* by Morant, *op. cit.* ; J. C. Brash and M. Young, 1935 ; D. Layard and M. Young, 1935.

¹⁰ Reports in *Biometrika*, by W. R. Macdonell, 1904, 1906 ; B. G. E. Hooke, 1926.

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Bronze Age immigrants may be accepted as equally well established, from Morant's analysis and from other facts, and there can be no doubt that there was a peaceful amalgamation of unknown extent between the two forms. Thus the early crania, as far as they are known, provide no enigmas. It is more difficult, however, to agree upon the origins of those forms which appear after the period of cremation. None of them is typically like those of the Neolithic or Beaker types but are mostly intermediate to the two. Morant believes that while the Neolithic people mingled somewhat with the Bronze Age invaders, the latter predominated and finally caused the disappearance of the former, the Bronze Age people similarly being largely exterminated by newcomers of the Iron Age, since the typical Bronze Age form is not found in the later period. The author however believes, together with Keith¹¹ and others, that the Neolithic inhabitants mixed extensively with the Beaker People, both types being extinguished only in the sense that in the late Bronze and the Iron Ages they were superseded by their own hybrid offspring. This change could certainly have given rise to the communities of Gallen Priory and Dunstable, whose measurements are like those of the actual Round Barrow groups already described, in which Neolithic type and Beaker type skulls are found together.¹² Judging by these two series alone, the Bronze Age element was probably stronger in England than in Ireland, since the Dunstable series resembles it more closely. However, it may be that both of the above hypotheses are correct, and that Iron Age invaders populated southern England while Bronze Age survivors continued to occupy most of the remaining territory.¹³

At present the principal problems relative to the early populations concern the events of the later Bronze Age and the general distribution of Iron Age types. When these are better understood the more complex questions raised by later events may be settled. The long-headed elements in England have often been ascribed to the Anglo-Saxons, but Hooke and Morant derive the population of London directly from the Iron Age, and in other regions, including Ireland, dolichocephaly is apparently the heritage of the Neolithic.

¹¹ Keith, *op. cit.*, also *The Antiquity of Man*, 1928, 2nd ed.

¹² See Howells, *op. cit.*

¹³ Archaeology has an analogy: in lowland Britain invading cultures tended to replace those existing, while in the highlands they tended to be absorbed by the latter.

Notes and News

CAW OF PICTLAND

The 'life' of St. Gildas (c. 517-572?) speaks of the saint's father, Caw, as the ruler of 'the most fertile region, Arecluta'. Now *Arecluta* (modern Welsh *Arglud*, 'On-Clyde') is certainly Renfrewshire. In the sixth century, and for long afterwards, this was a strongly Brythonic district, part of the British kingdom of Strathclyde, so if Caw was its king, he must have been a Briton, and probably a descendant of the 'tyrant' Coroticus (Ceredig Wledig) whose raid on Ulster so angered St. Patrick. Yet in medieval Welsh literature Caw is often mentioned as *Caw Prydyn*, 'Caw of Pictland'. In the tale of *Kulhwch* we are told that Caw was lord of the 26 *cantrefydd* of Prydyn. So far as I know, there is no instance of Prydyn=Strathclyde, or any part of the territories of the northern Britons. It always seems to mean the land of the Picts, from Caithness to the Forth, except when confused with *Prydain*, 'Britain'. No other British king of the Dark Ages bears this title. Why is Caw associated with Pictland?

The Pictish succession was by the female line, and in this way men who were not Picts on their father's side frequently had a valid claim to the kingship. During the seventh century the Picts were ruled by an Angle, Talorgan son of Eanfrith, and by a Briton, Bredei son of Beli. Was Caw another Brito-Pict who made a successful grab for the Pictish throne?

The Pictish king-list comes to us through Irish scribes, and may distort non-Goidelic names almost beyond recognition. For instance, one scribe achieved *Ohan* for Welsh *Owain*, and Urien (Urbgen) of Rheged appears in the *Vita Kentigerni* as *Erwegende*. Therefore, if Caw is in the list, he may be heavily disguised.

Only one possibility appears—Galan Arilith (who reigned 510-522, according to Skene's *Celtic Scotland*). *Galan* might be explained as Caw+Brythonic *walan*, as in Welsh *Buddwalan*. *Arilith* could be Ari(c)lith = Arecluta (cp. Gaelic *Cloithe*, later *Chluaide*, for Old Welsh *Clut*, 'Clyde'). Thus, Galan Arilith may be Caw of Arglud.

This, in itself, falls short of proof. But there is another link. Welsh hagiology includes a female St. Cywylllog (of Llangywylllog,

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Anglesey) who was a daughter of Caw Prydyn, and the wife of Medrod ('Sir Modred') the arch-villain of Arthurian romance.*

Since Medrod was killed in 'the Action of Camlann', about 538, and Cywylllog may have been born some years before 517, this tradition involves no chronological difficulty. It may be recalled that the Arthurian romances, from Geoffrey of Monmouth to Sir Thomas Malory, do not mention Medrod's wife, and tend to imply that he was unmarried. Therefore, any reference to his wife, no matter in how late a document, is very likely to be derived from pre-romantic (or pre-Galfredian) tradition.

Hector Boece, the Scottish historian or pseudo-historian, is generally regarded as somewhat less trustworthy than Geoffrey. This verdict is probably justified. But he was in a favourable position to collect surviving traditions of north-British origin. And he tells us that when King Arthur was fighting in the north, two of his chief allies were Lothus (Laudonus, Lleuddin) of Lothian, and a certain Gawolan. The son of Lothus, Medrod, is married to the daughter of Gawolan, as part of a treaty between Arthur and the northern chiefs. This would imply the identity of Gawolan and Caw. The Boetian form, Gawolan, also serves as a link between Caw and Galan.

The date of Caw-Galan's accession synchronizes with the activities of Arthur in North Britain, and one is tempted to wonder if some of Arthur's northern victories were fought to place his ally on the throne of Pictland. If so, we are not restricted to sites south of the Firth of Forth.

P. K. JOHNSTONE.

TIN DEPOSITS IN THE CAUCASUS

The contribution by Mr O. G. S. Crawford in a recent number of *ANTIQUITY* (March 1938, pp. 79-81) dealing with tin deposits in the Near East suggested that your readers might be interested in a brief summary of A. A. Jessen's¹ results.

The problem of native tin in the Caucasus has been studied by archaeologists since the discovery of bronze implements. G. Babst (*L'Etain*, Paris, 1884 etc.) was the first archaeologist to study the problem. His conclusions were against the possibility of native tin in

* S. Baring-Gould and J. Fisher, *Lives of the British Saints*, vol. II, art. *S. Cywylllog*.

¹ A. A. Jessen, *Olovo Kavkaza*, pp. 193-205. This report was translated by Eugene Prostov.

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the Caucasus. Arzruai² who, at the request of Virchow, studied the geology of the Caucasus, reported that cassiterite (Sn O_2) did not occur. E. Chantre, de Mortillet, and J. de Morgan also believed that tin was not obtained locally. Chantre was inclined to believe that the tin in Caucasian bronze implements was of Indian or Central Asiatic origin. De Morgan suggested that the Caucasus might well be the intermediate point in the importation of eastern (Asiatic) tin to the west. S. Reinach, basing his conclusions on the philological studies of Oppert, also believed that tin was imported. Scattered finds of pieces of cassiterite have been reported since 1882, and the presence of tin was established in several copper mines.

A part of the study of the Metals Commission of the State Academy for the History of Material Culture (GAIMK), in Leningrad consisted in examination of archaeological specimens containing tin, and the discovery of areas of concentration of such objects.

For copper objects the earliest recorded occurrence of tin alloy was attributed to about 3000-2000 B.C. in the Kuban area, where it was present in implements from the famous tumulus of Maikop, excavated in 1897, and from the tumulus near Makhoshevskaia, excavated in 1916. The next stage of Caucasian metallurgy belongs to the second millennium B.C., a development characterized by intensive production of copper implements in the central and western portion of the northern slope of the Caucasus range. These objects, of distinctive local character, were also found on the southern slope of the range, in Abkhazia and Imeretia. The analysis of copper objects of this period by the Institute of Historical Technology disclosed that no tin was present, except in one instance, as an alloy mixture in a copper axe from Khamyshkovo on the Belaia River, in the northwestern Caucasus. As this find belongs in the same general area as those from Maikop it is probable that copper ores in this area contained tin.

Transcaucasian copper objects from this period were found to contain a greater percentage of tin, reaching 8.33-8.60 per cent. in the case of implements from the Kyzyl-Vank burials, and thus testifying to deliberate introduction of tin into the alloy. It is impossible to determine whether the tin in these objects was imported, or was obtained somewhere in the area of the Zangezur range or on Karadagh Mountain in Iran.

The third cultural area extends through the end of the second to

² 'Über das Vorkommen von Zinnstein und die Bronze-industrie des Kaukasus', *Zeit. für Ethn.* 1884, pp. 58-60.

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the beginning of the third millennium B.C. This period is characterized by flourishing metal industries throughout the Caucasus. Bronze objects are found for the first time in North Caucasus, particularly in the area near the main mountain complex. Bronze objects with a high percentage of tin, and objects of pure tin and pure antimony characterize the metal industries of this period. The following copper industry regions can be discerned :

1. Western Transcaucasia and the main Caucasian range.
2. Central Transcaucasia (*a*, eastern Georgia ; *b*, Armenia and western Azerbaidzhan).
3. Talysh Region (on both sides of the USSR.-Iranian frontier).

Since each area is characterized by typical metallic inventories, it seems probable that many distinct centres of production existed in each region. Chemical analyses have been made by GAIMK for the first two regions (all known objects from Talysh area, discovered by J. de Morgan, are now located in the Museum at St. Germain-en-Laye, near Paris). Talysh copper and tin were probably of Persian origin.

The copper employed in western Transcaucasia was probably of Adzhar-Chorokh origin, the area now partly in Turkey. The objects from this region are characterized by their red colour, contrasting with the light gold colour of other bronzes of the period. Both copper and bronze were revealed by analysis. It is thought that the source of tin lay outside this area. The prevalence of pure copper objects in the coastal area (Batumi region) precludes the possibility that tin was imported from Trebizond or over the sea.

The bronze industries of the central Caucasus, well known because of excavations at Koban in northern Ossetia, differed from those from western Transcaucasia both in the type of inventory and in the composition of the materials. For example, there were far fewer types of agricultural implements : sickles, hoes, woodmen's axes, common in western Transcaucasia, are here unknown. Geographically, the area of Kobani culture is definitely located in the region of the central Caucasus—Kabardino-Balkaria, north and south Ossetia, the Gori and Borzhom regions of the upper Terek river. Copper found in central Caucasian cultural deposits may have been obtained locally from the northern slope of the Caucasus ; but it is more probable that it was imported from western Transcaucasia, or from the southern slope of the main range.

The chemical composition of bronzes from this area is well known, so that no new analyses were made by GAIMK. No objects of pure

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copper have been recorded from this area. In all probability the pure tin finds described by Chantre were antimony objects of a familiar type. According to Jessen, the tin in this area could not have been imported from the steppes to the north, where bronze appears at a much later date. It is most probable that there were local sources of tin either on the southern slope of the range, along the upper course of the Rion river or in south Ossetia.

The bronzes from eastern Georgia differ typologically from bronzes found in the central part of the Caucasus and western Georgia, and approach in type (swords, rounded battle axes, flat arrowheads) those from Armenia and Azerbaijan. The difference between the bronzes of East Georgia, Armenia and Azerbaijan consists in the types of spearheads, daggers, and, particularly, in dress ornaments.

Jessen suggests that the copper supply also came from the southern slopes of the range, probably from the Alaverdi-Borchatin area. The percentage of tin in bronzes varies greatly, being greater in a sword analysed by GAIMK, and less in a dagger. This is explained by deliberate regulation of the composition of the alloy with regard to the functions of the implement. In two of the objects tin was absent, antimony and lead having been used.

The last group includes the implements from Armenia and Azerbaijan. These objects are most common near Lake Sevang (Redkin Camp) and in the regions of Gana, mountainous Karabakh, and Kedabek. The finds are less common in the southern area, along the Araxes river. The sources of copper were located in the Alaverdi Region and elsewhere in Transcaucasia. Pure tin objects have also been found as well as a few objects of lead and tin alloys.

The period from the beginning of the first millennium B.C. until the spread of iron in the sixth to seventh centuries B.C. is characterized by intensive intercourse with the west (Greek colonies on the Black Sea), south (establishment of Achaemenid dynasty in Iran), and the north (establishment of the Scythian state in the steppe regions).

Local sources of tin were abandoned at this period, and the Mediterranean tin was supplied through the regular trade channels of the Graeco-Roman world. Jessen, who states that this process took place not only in the Caucasus but throughout the Near East, concludes :

1. Tin was used in the Caucasus from the end of the third millennium B.C.
2. Wide use of tin began with the manufacture of bronze implements and weapons, in Transcaucasia during the second millennium B.C.;

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in the central Caucasus region at the end of the second millennium B.C.

3. During the highest development of local bronze industries from the end of the second to the beginning of the first millennium B.C. local tin was probably used, although in certain regions of Transcaucasia importation from the south may have been possible.

4. The probable tin-producing regions in the Caucasus were :

(a) Central Caucasus (including both slopes of the main range, from Elbruz to the Terek river), upper Racha ; south Ossetia ; regions of Sharopani, Gori, and Borzhom.

(b) The copper-bearing belt between Alaverdi and the Terter regions.

5. On the basis of archaeological objects, it is possible to suppose that the tin-bearing copper ores were located :

(a) In the basin of the Belaia river (Kuban, north Caucasus).

(b) In Gana region (Azerbaijan).

6. During the period of Greek and Roman economic influence western European tin was first imported in the Caucasus ; as a result of this, local tin-mining was discontinued.

7. Imported tin predominated in the Caucasus in modern times. Local tin production, which may have been practised, was of no importance.

HENRY FIELD and EUGENE PROSTOV.

EZION-GEBER

Whenever a strong king ruled in Jerusalem, and the kingdom whose destinies he guided was surging forward to new, or to the reconquest of old, power, Judah invariably turned towards Arabia. For two hundred years, approximately, Judah and Edom engaged in a bitter struggle for the domination of the trade-routes which gave access to the spices of Sheba and the gold of Ophir. A study of the history of Israel and Judah reveals that from the time of David on, and particularly during the reign of Solomon, Arabia was not the back door but the front entrance of Palestine. Solomon was the first, and the last, king in Jerusalem who not only benefited from the overland trade-route to Arabia, but also took full advantage of the sea-route from Ezion-Geber to Ophir. One of his successors, Jehoshaphat, attempted to do likewise, but his ships foundered on the rocks near Ezion-Geber before they could commence their first voyage.

And king Solomon made a navy of ships in Ezion-geber, which is beside Eloth, on the shore of the Red Sea, in the land of Edom. (I Kings ix, 26). Once in three years came the navy of Tharshish bringing gold and silver, ivory and apes, and peacocks. (Ibid. x, 22).

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Enterprising entrepreneur that he was, Solomon's shipping line evidently made such inroads in the lucrative caravan trade that had probably been largely in the hands of the Queen of Sheba, that she hastened to Jerusalem with all manner of presents, in order to conclude an amicable trade-agreement with him.

And when the queen of Sheba heard of the fame of Solomon . . . she came to Jerusalem with a very great train, with camels that bare spices, and very much gold, and precious stones : and when she was come to Solomon, she communed with him of all that was in her heart, and Solomon told her all her questions . . . and she gave the king an hundred and twenty talents of gold, and of spices very great store, and precious stones. . . . (I Kings x, 1, 2, 3, 10).

A satisfactory commercial treaty was evidently negotiated between the two sovereigns, because we are informed that

And king Solomon gave unto the queen of Sheba all her desire, whatsoever she asked, beside that which Solomon gave her of his royal bounty. (I Kings x, 13).

The site of Ezion-Geber has long been searched for, but it was not till a few years ago that its approximate location near the present shore-line of the northern end of the Gulf of Aqabah could be fixed upon. An archaeological survey-expedition of the American School of Oriental Research, Jerusalem, discovered a long line of copper-mining and smelting sites in the Arabah, whose main period of activity could be attributed to the time of Solomon by means of pottery finds. The Arabah, it will be remembered, is the long rift which extends between the south end of the Dead Sea and the Gulf of Aqabah, as the northeastern arm of the Red Sea is called today. During the Exodus, the Israelites trekked along part of the length of the Arabah, when they left Ezion-Geber and Elath on their way to Moab, according to Deuteronomy, 2, 8. One of the copper-smelting sites was found at the very end of the Arabah on the top of a hill immediately overlooking the Gulf of Aqabah. It was felt that Ezion-Geber could not be very far away. It remained for a German explorer, Fritz Frank, to discover the insignificant looking little mound called Tell el-Kheleifeh, situated about 500 metres from the seashore, and about half way between Aqabah at the east end of the head of the Gulf, and Mrashrash at the west end. It was covered with fragments of pottery, which he correctly judged to be very old. When the American School expedition examined the site, it was immediately seen that the sherds were much the same as those found on the copper-mining and smelting sites in the Arabah proper, and that many of them belonged to the period of King Solomon. It was possible then definitely to affirm the correctness of Frank's theory

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that Tell el-Kheleifeh was to be identified with Ezion-Geber. Repeated examination of the entire shoreline, and particularly of the site of the Nabataean-Roman city of Aila, situated to the east of Tell el-Kheleifeh, has, however, failed to produce any traces of the sister city of Ezion-Geber, namely Elath. It is mentioned in the Biblical accounts down through the time of Solomon, and reappears then first in the accounts of the reign of Uzziah, to the complete exclusion of all further reference to Ezion-Geber. The possibility remains that vestiges of the Biblical Elath will be found deep under the ruins of Aila, but the writer considers it to be a very remote possibility, for reasons which will be dealt with below.

In March 1938 the American School of Oriental Research, Jerusalem, began the excavations of Tell el-Kheleifeh and concluded the first campaign there three months later. About a third of the site has been opened up, revealing for the first time in more than 2500 years some of the mud-brick structures of Ezion-Geber. After its final destruction sometime approximately in the seventh century B.C., the site was abandoned, and never again touched till our spades pryed into its secrets. The Nabataeans built their city farther to the east. The excavations have revealed an occupancy of Tell el-Kheleifeh from about the twelfth to the seventh century B.C. If Tell el-Kheleifeh were to be identified with Ezion-Geber alone, one should find there pottery dating no later than the ninth century B.C. The fact that the pottery finds at Tell el-Kheleifeh can be dated down to the seventh century B.C. convinces us, that in its later history, the site of Ezion-Geber was known as Elath. In its earliest history, Elath probably consisted of no more than a few mud-brick houses situated to the east of Ezion-Geber, and all traces of them disappeared, particularly after the name of Elath was transferred to the new city which Uzziah built on the ruins of Ezion-Geber. The latter site, to judge from archaeological evidence, seems to have been destroyed and abandoned for several generations, after the Edomites regained their independence from Joram, who followed Jehoshaphat to the throne of Judah. An example of two names given in different periods of history to the same site is furnished by the site of Tell Beit Mirsim in southern Judah, excavated by Albright, and which is known in the Bible as Kiriath Sefer and as Debir.

Beginning at the northwest end of the mound, the excavations have revealed what appears to be the industrial section of Ezion-Geber. A large refinery was found, containing ten furnace-rooms, and numerous pottery-crucibles placed over masses of hard-baked clay débris.

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The ores which had been mined in the immediate vicinity and in the Arabah, and 'roasted' on the spot, were brought to this refinery, and converted into ingots of copper. Some of these were then worked up into finished implements, ranging from copper dishes to spear-heads and fish-hooks, and nails. In each of the walls of the refinery were two rows of flues, the upper row leading into air-channels running along the length of the main walls. The strong winds which blow constantly from the north furnished the draft necessary for the proper working of the furnaces. The necessity of harnessing the winds to their industrial purposes explains why the original builders of Ezion-Geber chose what is actually the most inclement site they could possibly have found along the entire shore-line for the location of their city. Situated in the centre of a curve, backed on the east side by the hills of Edom which continue into Arabia, and on the west side by the hills of Palestine, which continue into Sinai, the refinery was exposed to the full force of the winds blowing most strongly down the centre of the Arabah. This fact explains also why the port of Ezion-Geber is today some 500 metres away from the sea. Frequent sand-storms accompany the winds, and we estimate that the sea is retreating at the rate of about ten centimetres a year. Originally, the sea was much nearer to Ezion-Geber than it is today.

In addition to its importance as an industrial centre and sea-port, Ezion-Geber was a central market-place for the great caravans which came from Arabia to Palestine. Much pottery was manufactured at Ezion-Geber not only for local needs, but also to supply the wants of the camel-trains, with their precious loads. Particularly common were pottery canteens, usually called 'pilgrim flasks', with which the caravanners provided themselves for the thirsty rides in the practically waterless desert on their way to and from Ezion-Geber. Much of the pottery manufactured at Ezion-Geber represents new types, which can only be explained by the fact that it was the centre of a cultural area separate from that of Palestine and Edom, and which extended through northwestern Sinai and northwestern Arabia. Particularly interesting are large numbers of hand-made pots with ledge-handles, which in any other excavation the writer would have ascribed to the Early Bronze Age, dating before 2000 B.C. They were, however, all found with indubitable Early Iron Age types, similar or closely related to such types from Palestine and Transjordan. Beads, baskets, ropes and yarn were also produced in this busy city, located at the crossing-point of caravan routes, and at the head of the Red Sea.

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The copper which was mined in the Arabah and refined at Ezion-Geber formed the main export which Solomon sent by ship and by caravan to Arabia in exchange for the valuable commodities obtainable there. It was a trade from which he waxed exceedingly wealthy. We are told in the Bible that

'the weight of gold which came to Solomon in one year was six hundred and three score and six talents of gold, beside that which he had of the merchant men, and of the traffick of the spice-merchants and of all the kings of Arabia, and of the governors of the country'. (I Kings x, 14-15).

Indeed, in the person of Solomon was fulfilled more than in any one else before him or after him the promise according to which Israel was to inherit.

'a land of oil olive and honey; a land wherein thou shalt eat bread without scarceness . . . a land [in this instance the Arabah] whose stones are iron and out of whose hills thou mayest dig brass. (Deuteronomy VIII, 8-9).

NELSON GLUECK,

Director, American School of Oriental Research, Jerusalem.

THE ODILIENBERG, ALSACE-LORRAINE

Mont St. Odile, as it is now called, is justly celebrated for the prehistoric fortifications, or Pagan Wall, which crown its summit; and has also gained some notoriety from a supposed temple on the site, which has been compared with Stonehenge and Avebury. A few words on both may be of interest.

The fortifications follow closely the irregularities of the hill-top, with a perimeter of about six miles and an enclosed area of some 250 acres. The wall, from 6 to 7½ feet wide and still sometimes as much as 10 feet high, is constructed almost entirely of squared stones which average 3½ by 2½ by 1 foot thick. The interesting part about it is that each stone is cut on the upper surface with three, or more rarely four to five, sockets for the insertion of oak keys to connect it with its neighbour. The sockets are dovetailed, about 2 inches deep, 4 inches long, and 2¾ tapering to 1½ inches wide. A few of the oak keys found *in situ* are now in the Strasbourg Museum. The chief object in so tying the stones together was presumably to prevent an enemy prizing out one stone after another from the face of the wall—a mode of attack to which unmortared walls must have been very exposed.

Inside the Roman stronghold at the very top of the hill was once a structure known as the Pagan Temple. It consisted of a circular

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floor sunk about 18 inches into the rock and about 13 feet in diameter, round which were six, probably dressed, stone uprights. It was destroyed in 1740, and the site is now occupied by a 'gentleman's lavatory'.

A few hundred yards away M. Forrer some forty years ago excavated a small heap of rectangular-shaped stones, 15 inches below the surface, and $5\frac{1}{2}$ feet in diameter. There were 280 of these stones, the longest 8 inches, and the great majority between 2 and 4; and in thickness they varied between $\frac{3}{4}$ and 2. At a distance of a few inches, but in a different stratum, was a complete Roman urn, and not far off some sherds of La Tène pottery. Among the stones themselves was a 'neolithic sherd'.

M. Forrer thought the stones may have been a child's toy; that they were arranged in concentric circles; and that the plan must have been copied from some model in the neighbourhood, perhaps (as there is none other known) the Pagan Temple, which he supposed may have had outer rings of which all trace has been lost. He also drew comparisons with well known stone circles, including Stonehenge and Avebury; and besides illustrating these, attempted two reconstructions of his 'find'. They differ from each other, but are alike in showing some of the stones as lintels; neither can claim to represent the actual toy, still less an original stone circle.

Nothing datable has been found in close association with the wall; and the only direct evidence for the stones is the so-called neolithic sherd found in the same heap. M. Forrer attaches little significance to the Roman urn found just outside, or to the La Tène pottery scattered in the neighbourhood.

The stones were housed in the Strasbourg Museum, and disappeared during the war. Whatever the date or object represented, one cannot but deplore their loss.

R. H. CUNNINGTON.

SICILIAN BRONZE SHAFT-HOLE AXES

MR CHRISTOPHER HAWKES writes :—

Since the publication in the June number of *ANTIQUITY* (no. 46, p. 225) of the bronze shaft-hole axe of Sicilian Late Bronze Age type from the beach near Hengistbury Head, Mr G. C. Dunning, F.S.A., has kindly communicated to me another in the museum at Nantes (Loire-Inférieure). This specimen, of which he has given me a drawing, is very similar to the Hengistbury find, but with a larger knob behind

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the shaft-hole and a less widely-splayed cutting-edge ; its length is 10 cm. As I pointed out (p. 227), these axes must have come from Sicily or South Italy by an Atlantic trade-route, and two examples of the equally Sicilian and contemporary elbow-brooch from West France (in the Vénat and Notre-Dame-d'Or hoards) make the appearance of such an axe in one of the principal West French museums no surprise. The axe is no. 82 in the F. Parenteau Collection (*Catalogue du Musée archéologique de Nantes* (1903), p. 22), but most unfortunately all record of the site of its discovery has apparently been lost, and in Parenteau's *Inventaire archéologique*, where the axe is figured on pl. 7, figs. 2 and 3, the text (p. 16) gives no locality whatever. It is therefore impossible to know whether this is simply a 'collector's piece' and therefore archaeologically worthless, or a valuable link, from somewhere in the Nantes district, in the chain of finds proving the existence of a Mediterranean-Atlantic trade-route in the Late Bronze Age. If it is really the latter, a little trouble could easily have preserved the record of its discovery, just as failure to take a little trouble could have lost that of the Hengistbury (more strictly, Southbourne-on-Sea) specimen. And it is perhaps worth recording that the trouble in the latter case took almost exactly the course prescribed for our German neighbours by the authorities of Halle, as illustrated by the Editor in the same number of *ANTIQUITY* (no. 46, pp. 130-1). The only essential difference is that what is there contemplated as a matter of routine happened in this case by spontaneous individual initiative.

SIR GAWAYNE'S GREEN CHAPEL

In the fourteenth century romance entitled 'Sir Gawayne and the Grene Knight', occurs a well-known description of the Green Chapel at which Sir Gawayne met the Green Knight in order to receive the return blow for the one he had inflicted on the Green Knight a year previously at Arthur's court. The following is a fairly literal translation of the passage : 'Then Gawayne strikes spurs into Gringolet and picks up the path, making his way along by a bank beside a wood, and rides over the rough hillside to the dale. Then he looked round him and it seemed wild to him and he saw no sign of a place of refuge anywhere about, but only high steep hills on every hand, with rough rugged crags and gnarled stones so that it seemed to him as if the crags grazed the very clouds. Then he halted and held in his horse and looked this way and that to find the chapel. But soon, a little way off, in a glade, he saw a sort of mound which seemed to him remarkable. It was a

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rounded mound by a hill, beside the water's edge, near a waterfall in the stream which flowed there. The stream bubbled therein as though it were boiling. The knight urges on his horse and comes to the mound, alights in a seemly manner and fastens the reins to a lime-tree, his noble steed to a rough branch. Then he turns towards the mound and walks about it, debating with himself as to what it could be. It had a hole in the end of it and in either side and was overgrown with grass on all sides. It was quite hollow within, nothing but an old cave or the fissure of an old crag, he could not tell which'. (ll. 2160-2183).

The description of the chapel in the poem fits in quite well with the ordinary Neolithic or Early Bronze Age round or long barrow in all respects save one, and that is the fact that it has an entrance not only at the end but on either side. Burial chambers possessing curious holed entrances in the sides are comparatively rare but are to be found in various districts in the Cotswolds and elsewhere. Now the dialect in which this poem is written shows that it is definitely connected with the Northwest Midlands. There is one and only one chambered tomb with a holed entrance found in this region and that is the chambered tomb called the Bridestones, a few miles west of Congleton, situated among the foothills of the Peak district. There remains here a long rectangular gallery at the end of a long barrow, with holed entrance at the east end, and the remains of a porthole in the partition dividing the gallery into two parts. It had originally some side-chambers which might possibly be the other entrances referred to. The district in which the Bridestones stand corresponds closely with the vigorous description which the poet gives of the countryside through which Sir Gawayne passed to reach his chapel. The stones are situated close by the side of some high hills on the Cheshire-Staffordshire border. The whole district is wild and hilly. The only point in which the description of the situation of the chapel does not correspond is that it is not now on the bank of a stream. We need not however in a poem of this kind expect more than a general description of the most striking features of the scene depicted. The medieval poet did not set out to give a description accurate in every detail, any more than the modern poet does.

It is interesting to note that in Wales a number of these burial chambers are connected with the name of Arthur. And in Herefordshire a burial chamber between Bredwardine and Dorstone is called Arthur's stone. I have no evidence that the Bridestones were ever connected with the name of Arthur.

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Miss Serjeantson in her article on the West Midland Dialect in the *Review of English Studies*, 1927, III, 327 ff. suggests that the dialect of the poem is that of the Peak district of Derbyshire. The Bridestones are close to this district. It would be too wild a surmise to claim the Bridestones definitely as the original of Sir Gawayne's Green Chapel. But it looks pretty certain that the chapel was a burial chamber of this peculiar type. If it is not Bridestones then it must be a similar one which has disappeared since the Middle Ages or which has not yet been noted. Both these alternatives are possible. There is in fact, 25 miles southwest of the Bridestones, near Muckleston in Staffordshire, a site called the Devil's Ring and Finger (see *ANTIQUITY*, 1927, I, opposite p. 229) which is possibly the remains of a burial chamber with holed entrance, although it is in too ruinous a condition to allow of certainty on this point. I am indebted to Mr Glyn E. Daniel, St. John's College, Cambridge for information about the Bridestones.

BERTRAM COLGRAVE.

[While agreeing in general with Mr Colgrave's interpretation, we think it unnecessary to postulate that the monument was necessarily of the specialized 'port-hole' type. Note that the 'holes' are said to have been in the end and in either side of the *mound*. Such a description could quite naturally be applied to a partially ruined chambered mound, the 'holes' being burial-chambers that had been exposed. There are several such megalithic barrows in Derbyshire which might suit the context equally well; see Mr C. W. Phillips' survey of the Megalithic Monuments of the Trent Basin, Ordnance Survey Professional Paper No. 11, advertised on the back of the cover of this number.—O.G.S.C.]

ANCIENT MONUMENTS

Letters are being received from readers in all parts of the country, complaining of the damage or destruction of ancient monuments; even those which have been scheduled by the Ancient Monuments Branch of H.M. Office of Works are not immune. The Editor (O.G.S.C.) has decided to collect the relevant facts, and asks any readers who may know of recent instances to write to him direct. Please address to NURSING, SOUTHAMPTON.

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THE OUTRIGGER-NUGGAR OF THE BLUE NILE (PLATES I-II)

One of the least known of the many curious river-craft encountered in Africa is the outrigger-nuggar (*naggr*) of the Blue Nile, trading mainly between Wad Medani and Omdurman. The cargo generally carried is cut timber for the use of the river steamers and contractors. It is a strange looking craft, flat-bottomed and shallow in draft as befits a boat plying upon a river carrying little water when its Abyssinian tributaries are running low. To compensate in area for this deficiency in depth, the beam is extraordinarily great in comparison with the length, which is less than twice the maximum beam. The saucer-shaped hull lies low in the water with but six to eight inches of freeboard when fully laden. Like all Nilotic cargo vessels the bows are bluff and rounded, but unlike them there is scarcely any sheer in this region. Save for this insignificant rise, the gunwale is horizontal throughout its length. The stern is truncate, filled in, transom fashion, with cross planking nailed within the ends of the side strakes and against the outer face of the stern-post, here fitted on the inner side of the shell. A stern-post is present as well as a stout keel almost flush with the exterior surface of the garboard strakes. The rudder, as is usual in boats navigating on inland waters, is of great size and power; instead of being slung by gudgeon and pintle as in other Nilotic craft, its head is held in position by stout lashings led inboard around the top of the stern-post; below, the heel of the rudder-post appears to rest on the projecting end of the keel. The tiller has its own individuality; instead of the straight bar sloping upward to the hands of the standing steersman, as seen in the gyassa and Nubian nuggar, it lies in a horizontal plane save for an arched curve to allow it to clear the projecting head of the stern-post and the bulky rudder lashings.

Neither frames nor ribs are present. The rigidity of the hull depends entirely upon the thickness and strength of the skin planking, the thoroughness with which the components are combined into a self-supporting whole, and upon the presence of three stout deck beams, tying together the two sides. The master beam is placed at mid-length, with the others near to the stem and the stern to function respectively as supports for short fore and after decks. The space between the decks is open, with the after part roofed with reed matting on a rudely made arched framework, for the protection of passengers and perishable cargo. The exterior of the hull is left naked; neither paint, tar nor oil is ever applied.

As these boats depend mainly upon their sweeps when going

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downstream against the wind, but have to be tracked along the bank by three or four of the crew when going upstream, no true mast is carried ; in its place is a tall and slender tracking pole in two or three spliced sections, bearing at the summit a broom-like finial. Sometimes, if the wind be specially favourable, a makeshift sail—a strip of cotton or a boatman's garment—may be spread aloft on a couple of poles. According to Mr A. E. Robinson the men row seated, facing the stern except when threading their way through channels choked by shifting sandbanks ; at such time they stand, facing forward, ready to check the boat's way, or to backwater should she touch ground (PLATE I).

In common with the ordinary type of sailing nuggar trading on the Upper Nile in the reaches between Khartoum and Luxor—the type from which this craft is the degenerate descendant—the skin planking of the Blue Nile outrigger-nuggar consists of short lengths roughly hewn from the trunks of the thorny *sant* tree (*Acacia nilotica*), the one common timber tree of the country. These planks, varying between four and eight feet in length on the average, have to be of exceptional thickness, $2\frac{1}{2}$ to 3 inches, for the lack of frames to which they could be nailed has necessitated the adoption of a specialized technique.¹ Until 1820 when the Turks, having occupied the country, introduced the use of iron nails and spikes,² it is probable that nuggar planking in the Dongola reaches³ was pinned together with hardwood dowels in the manner seen in the funerary barges of the XIIIth Dynasty, found at Dahshur and now in the Cairo Museum.⁴ With the introduction of metal fastenings, the technique had to be modified. In the method adopted the thick planks continued to be applied edge to edge, but in lieu of broad dowels, long iron nails were driven obliquely downward through the seam. To allow of this being done without leaving the nail heads projecting, a notch is cut in the upper plank a couple of inches or so above the seam and it is here that the nail is driven downward into the lower plank.

The origin of this system would be extremely doubtful did we not

¹ In nuggars built north of Wadi Halfa a few frames are inserted during construction ; this is an innovation due to culture contact. Even so, it must be noted that the frames are put in *after* and not prior to planking up the sides ; also, that no inner skin is provided.

² Lord Prudhoe, 'Extracts from private Memoranda . . . on journey from Cairo to Sennar in 1829 . . . ' *Journ. of the Royal Geographical Society of London*, 1835, v, 58.

³ Until Ismail Pasha's conquest of the Sudan in 1820, no planked boats were in use on the Nile south of Khartoum, apart from some canoes with side planks added.

⁴ Somers Clarke, 'Nile Boats and other Matters', *Ancient Egypt*, 1920, pts. I and II.

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know that the iron for making nails, imported for boat-building purposes on the Blue Nile in 1820 and for some years thereafter, was shipped from Odessa in Russia and reached Khartoum via Cairo and the Nile.⁵ Because of this and the fact that the first boat-builder employed by the Turko-Egyptian Government to build boats and barges on the Blue Nile was a Greek,⁶ it is reasonable to infer that the technique also came from a Russian source, for we know that a certain primitive type of barge in use on inland waters in Russia is put together in practically the same manner. This Russian technique has been described and illustrated by D. Verwey⁷ (see FIGURE opposite).

Indian traders at Suakim and Wad Medani may also have had some influence, for in vessels built on the Gujarat coast of India a similar method of spiking each upper plank to the next lower one is employed. But the Russian technique is more nearly related, for by it flat-edged planks are used, whereas in the Gujarat technique an elaborate zig-zag tongue and groove joint is employed.⁸

The survival in the Sudan of a boat-building technique closely allied to that of Dynastic Egypt—absence of frames, the joining of the skin planks by dowels or pins formerly, by nails today, and the lack of an inner skin—is of great interest, but we have to recognize that the features enumerated are shared in common with all typical Nile nuggars, whereas the presence of an accessory rowing-fitting of specialized form is a distinctive characteristic, confined, I believe, at the present day to the Blue Nile nuggar. This peculiar accessory consists of two massive outrigger booms, roughly squared to about 6 inches, projecting from each side of the boat. Passing inboard over the gunwale, to which they are made fast, the inner ends in each pair are overlapped and bound firmly together.

To form each outrigger boom a stout and long branch of tough *sant* wood is chosen, with a natural forking at one end. The branches of this fork are left a few inches in length and this crutch forms a rough but efficient rowlock, wherein a long sweep rests and pivots. As the distance outboard of the rowlock is from eight to nine feet, the loom of the sweep is correspondingly long. So, too, is the blade, long and rather narrow, parallel sided, with an elegant curve in the outer half.

⁵ Lord Prudhoe, *loc. cit.*, p. 57.

⁶ *ibid.* 58.

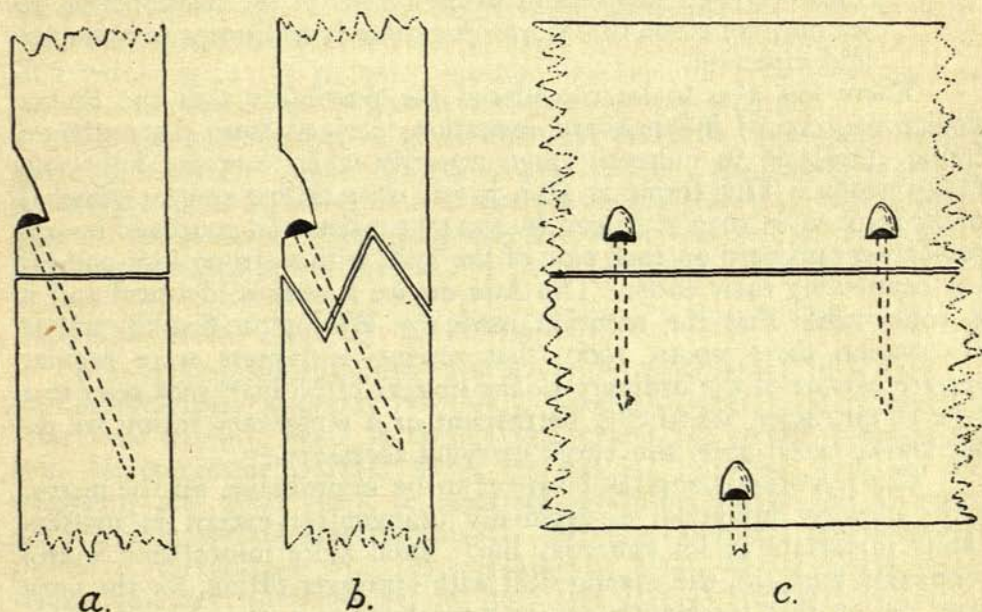
⁷ 'Russian Barges', *The Mariner's Mirror*, 1931, XVII, 189.

⁸ J. Hornell, 'The Tongue and Groove Seam of Gujarati Boatbuilders', *The Mariner's Mirror*, XVI, 309-12.

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When suitable timber is not available from which to fashion a complete sweep, the blade, measuring some eight feet in length, is spliced to the outer end of the loom and secured by several clenched nails. In spite of the length, one man suffices to manage each sweep.

Apart from the East African outrigger canoe where the type is Indonesian and the outrigger employed solely as a stabilizing fitting on seagoing craft and never used as an accessory in propulsion, there is



(a) EGYPTIAN AND NORTH RUSSIAN SYSTEM OF JOINING STRAKES; (b) THE GUJARATI SYSTEM;
(c) BOTH SYSTEMS ARE IDENTICAL IN FACE VIEW

nothing even remotely resembling the nuggar-outrigger in Africa. Except for coastal outrigger canoes in which paddles replace oars when sail is not employed, the same absence of any related device is true also of Asiatic water transport.

In the search for a possible source of origin three widely separated instances of the outboard pivoting of oars are known. They comprise :

- (a) The bracket outriggers of rowing skiffs such as are used in England in the inter-university boat-race.
- (b) The outboard gallery, parados or outrigger on either side of the galley type of vessel, whereof the Venetian *Bucentaur*, destroyed by Napoleon, was the last survival. Powerful sweeps

pulled by several rowers pivoted on the outer edge of this outwork. The same type in rude form (*kora-kora*) existed in the Malay Archipelago into the 19th century and a vessel so propelled is figured by Admiral Paris in his monumental *Essai sur la construction navale des peuples Extra-Européens*, 1841.

- (c) The remarkable adaptation of the European type of oar to use in the double canoes of the Atiu Islanders in Polynesia.⁹ This occurred subsequent to the arrival of the missionaries, so we may conclude that it was due directly to European influence and direction.

There has also to be considered the possibility that the Sudan device may be of independent invention, derived from the outboard frame employed to increase cargo capacity when carrying light and bulky goods. This frame as seen in use on a sailing nuggar which I photographed in 1937 at Aswan (PLATE II) consists of a couple of booms projecting outboard on each side of the hull, with a strong fore-and-aft bar connecting their ends. The Atiu device is almost identical and it is conceivable that the mention made by Warrington Smyth, whose observation dates about 1900, that rowing outriggers were regular appurtenances of the ordinary *sailing* nuggar of Nubia¹⁰ may refer to a type of outrigger, whether a permanent or a temporary fitting we do not know, based upon this cargo carrying accessory.

This hypothesis appears however to be improbable, for the negro, while cleverly imitative, is decidedly uninventive except in matters vitally important in his everyday life. Even more improbable is any connexion with (a), the rowing skiff with outrigger fitting, for the very good reason that the Sudan device dates back to a period long before contact with English customs became operative. If we have to consider the Sudanese rowing outrigger as a contrivance not of recent introduction, the most probable conclusion would seem to be that in it we have a much degraded survival of the outboard parados of the Mediterranean galley, whereby adequate leverage was provided to enable sweeps of great length to be employed with the maximum of propulsive force combined with a minimum of human effort.

Should this be the correct solution of the problem of the origin of

⁹ A. C. Haddon and J. Hornell, *The Canoes of Polynesia*, vol. 1, fig. 110.

¹⁰ *Mast and Sail in Europe and Asia*, p. 297, 1906. His words are:—'In coming northward down river, and against the prevailing wind, they [the nuggars] are fitted with outriggers and long sweeps, and row double-banked—the men stand to their work facing forward'.

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this remarkable African method of increasing the leverage of oars, then in the nuggar of the Blue Nile—a degenerate and recent modification of the Dongola nuggar—we have a combination of features derived from three very diverse sources. The lack of frames and of an inner skin and the former use of dowels, continue the boat-building tradition of the Middle Empire of Ancient Egypt; the use of outrigger leverage for the sweeps is a link with the days when Turkish corsairs raided the Christian coasts of the Mediterranean in their piratical galleys, while the substitution of iron nails for wooden dowels to fasten together the skin planking in the peculiar manner described is a connecting link between the river craft of Russia and those of the Sudan.

For the photographs of these outrigger boats and for many details gathered during a long residence in the Sudan I am indebted to the generosity of Mr A. E. Robinson, who has kindly placed all his information on this subject at my disposal, including the reference to Lord Prudhoe's travels in the Sudan.

JAMES HORNELL.

REINDEER ROUND-UP (PLATE III)

The accompanying illustration is from a photograph of a drawing by George Aden Ahgupuk (Twok), a young Alaskan.* It represents 'the most exciting event in the Eskimo year: the reindeer round-up into the communal corral. Dogs are chasing reindeer, Eskimos are wrestling with stray stags, animals are galloping wildly and villagers are slipping, sliding and shouting'. So far as one can see there are points of resemblance with the well-known 'kites' of the Transjordan Desert (see *ANTIQUITY*, 1929, III, 395, 401, 403-4); though of course the 'kites' are of stone walls. The drawing is published here for its anthropological interest, as an illustration of primitive hunting methods by one of the hunters. It does not appear to need any fuller description, though a verbal account by someone with intimate knowledge of the practice would have been interesting if it had been available.

O.G.S.C.

UNDERGROUND DWELLINGS IN CENTRAL EUROPE

(PLATE IV)

In *ANTIQUITY* for March 1936, pp. 25-36, we published an article by Dr Buttler on existing forms of primitive habitations in Europe. The

* It was published in *TIME*, 25 Jan. 1937, p. 29. We wish to thank the Editor for permission to reproduce, and one of our readers, Miss A. E. Robinson, for her kind help in securing the print.

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accompanying illustration, first published in 1673* will be of interest both to Central European students and excavators. Allowing for some rather unnatural symmetry and neatness, for which the engraver is probably responsible, the picture gives a good idea of a type of dwelling that must be a survival from very remote times. The following is the description in the text :

‘ From thence we came to Valcovar, where there is a handsome wooden Bridge over the River Walpo or Valpanus, plentiful of Fish ; and upon which, to the Westward, stands the Town of Walpo, taken by the Turks in the year 1645. Then by Sotzin Palanka, and Towarnick or Tabornick, to Metrouitza a large Town, and a great place for a Faire, strengthened by the adjacent Lake. So to Simonovitz, leaving at a good distance on the right hand the famous old Sirmium, now an inconsiderable place, whereof I have also said somewhat elsewhere. They call this Country, Schremnia ; and that, more near the Dravus, Bossega.

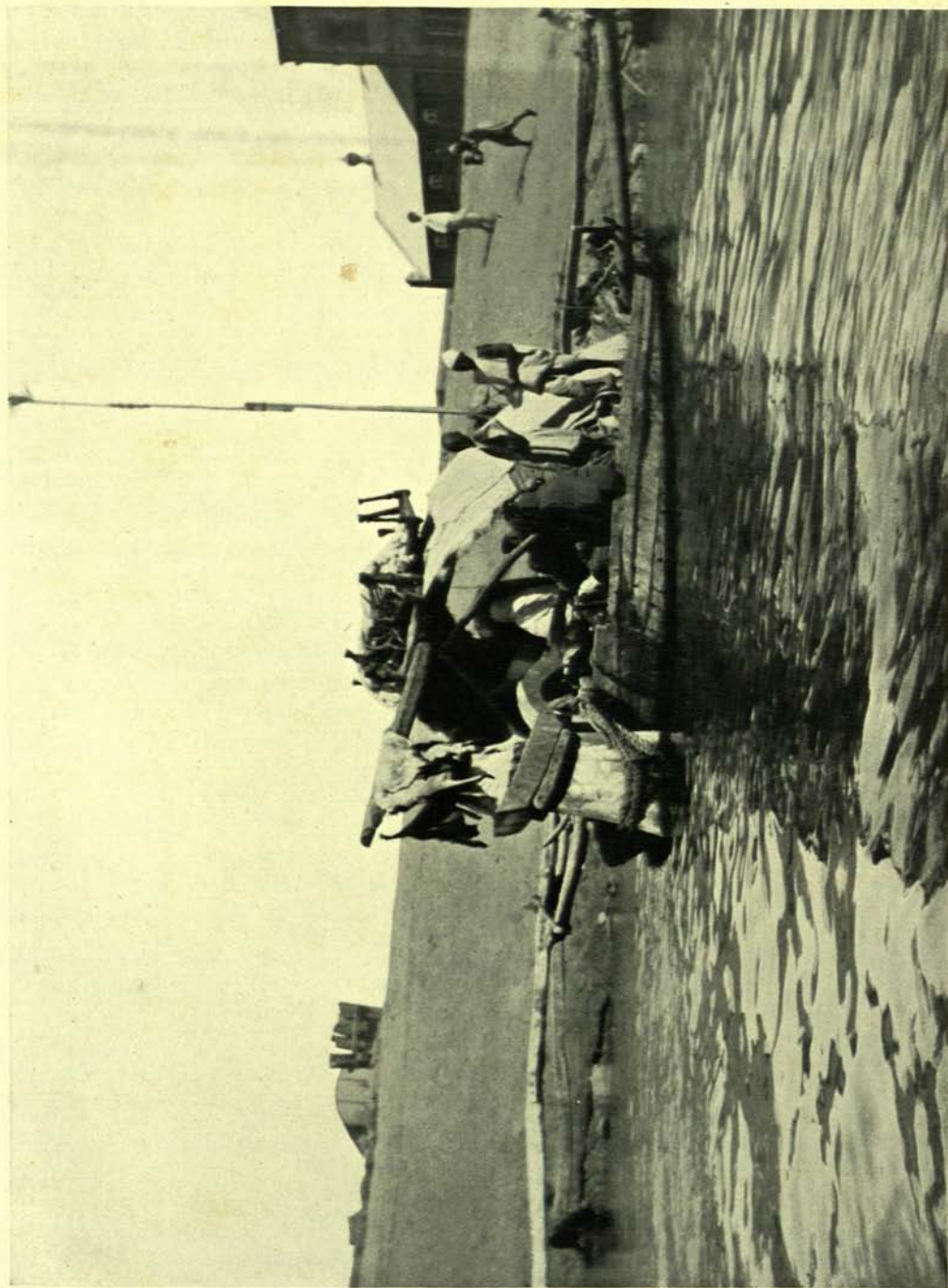
In this Country, many Families, and the Inhabitants of divers little Towns, live all under ground. I had formerly read of Troglodytes and subterraneous Nations, about Ægypt ; but I was much surprized to see the like in this place, and could not but say unto my self :

Now I believe the Troglodytes of old,
Whereof Herodotus and Strabo told ;
Since everywhere, about these parts, in holes
Cunicular men I find, and humane moles.

Near these Habitations are Wells, to supply them with water ; which they draw up, like Dyers and Brewers : and dogs come out upon Strangers. As we travelled by them, the poor Christians would betake themselves to their holes, like Conies. So that, to satisfie our curiosities, we were fain to alight, and enter their houses, which we found better then we expected, divided into partitions, with wooden chimneys, and a window at the farther end, a little above the ground : and all things as neatly disposed, as in other poor houses above ground ; although but meanly, after the fashion of those parts. Their speech is a Dialect of the Schlavonian. So travelling on between the Danubius and the Savus, we came to Zemlin upon the Danube ; from whence we

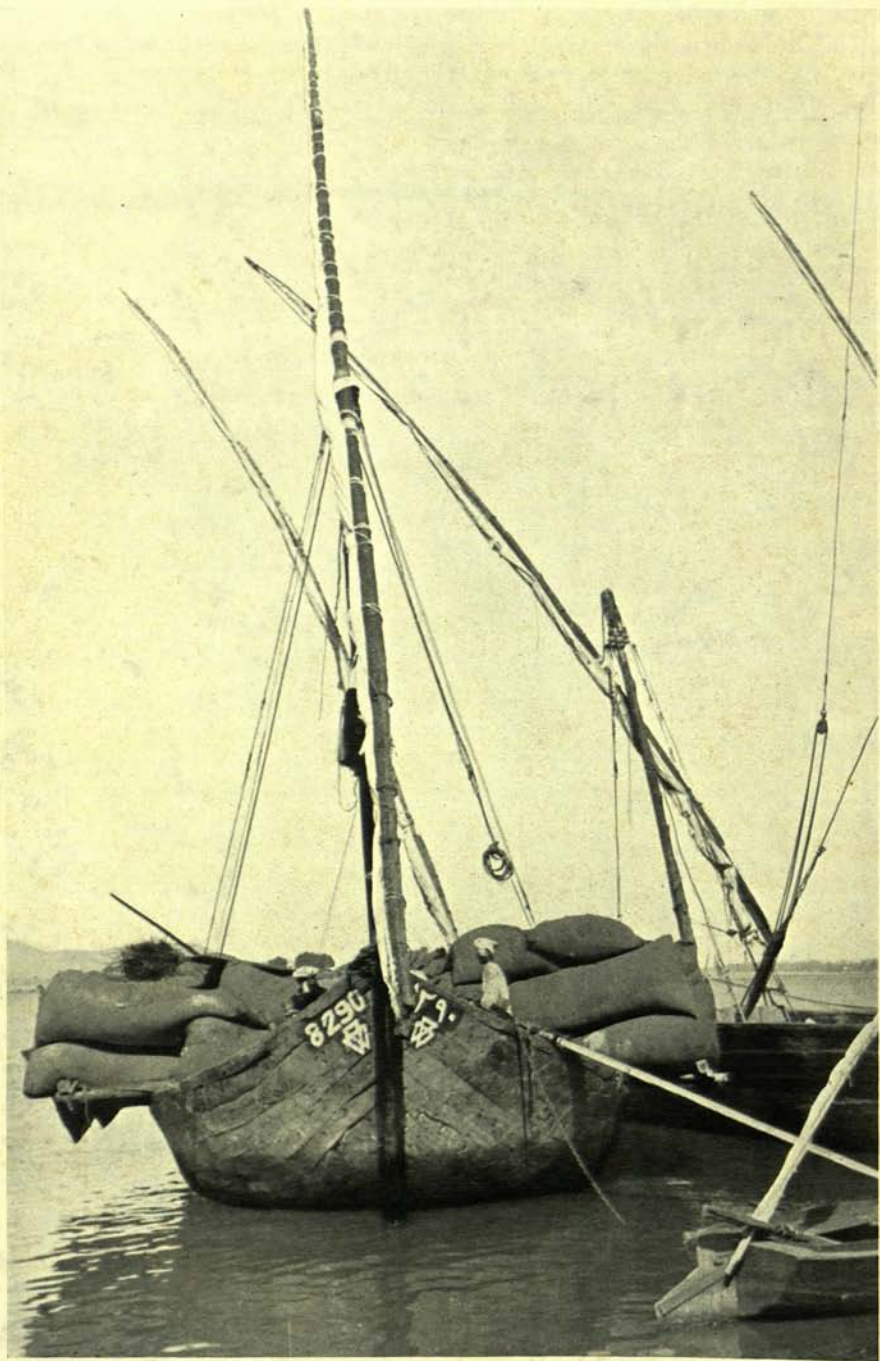
* *A Brief account of some Travels in Hungaria* [and other countries] by Edward Brown, M.D. London, 1673, pp. 37-9, plate opposite p. 38.

PLATE I



A PAIR-OARED OUTRIGGER OF THE BLUE NILE (*see p. 355*)
ph. A. E. Robinson

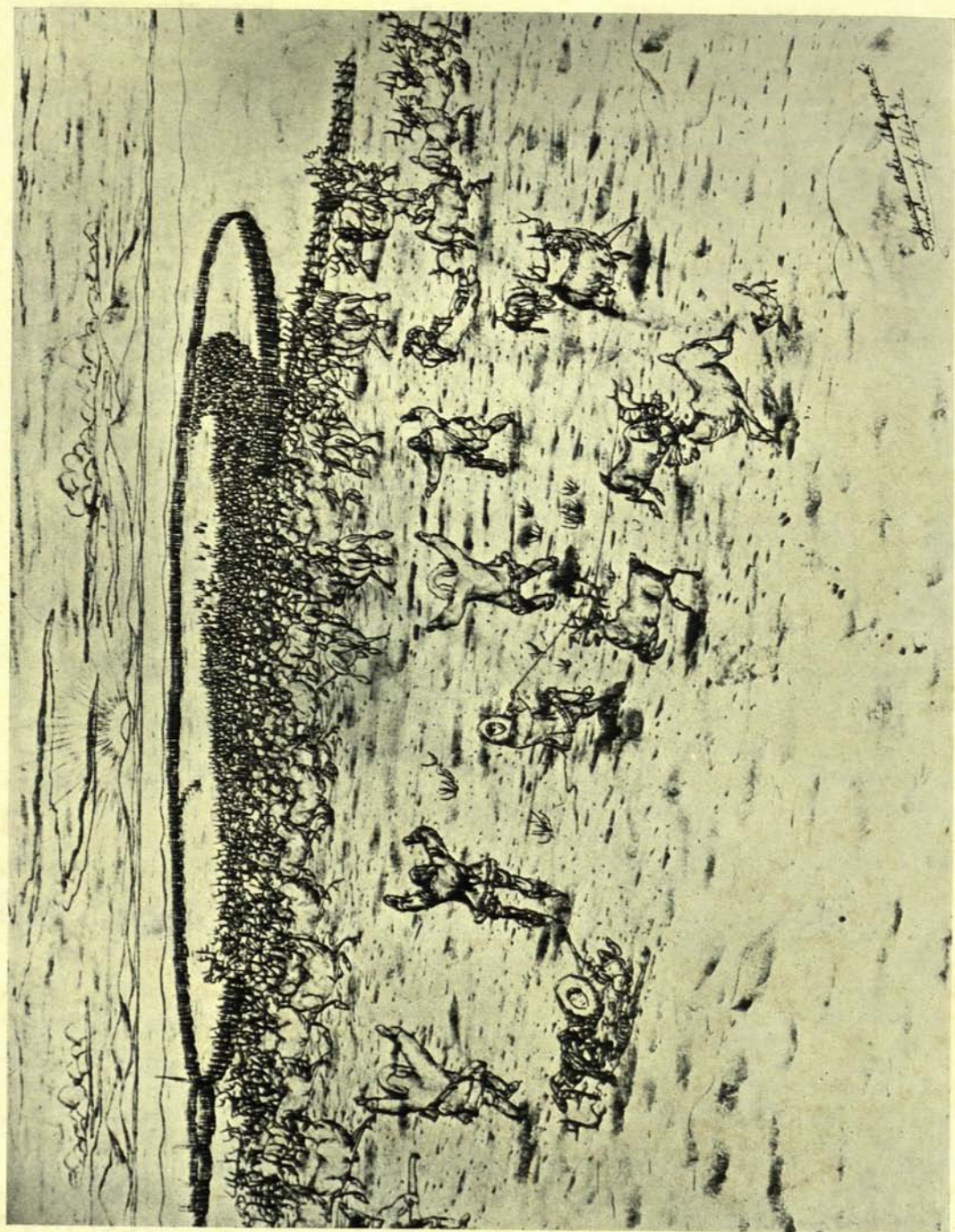
PLATE II



A SAILING NUGGAR AT ASWAN FITTED WITH AN OUTRIGGER FRAME,
TO INCREASE CARGO CAPACITY (see p. 358)

ph J. Hornell, 1937

PLATE III



AN ESKIMO REINDEER ROUND-UP (see p. 359)
From drawing by G. A. Ahgupuk

A black and white woodcut illustration of a landscape. In the foreground, a large, billowing cloud or smoke rises from the ground. To the right, a person is seated on the ground, looking towards a large crane. The crane has a long, curved arm supported by a vertical post. A small, conical object, possibly a hat or a piece of equipment, is suspended from the crane's arm. In the background, there are several small, simple buildings or huts. The overall style is that of a traditional woodcut print.

UNDERGROUND DWELLINGS IN CENTRAL EUROPE (see p. 360)

After Edward Brown (1673)

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had a fair Prospect of Belgrade, into the Castle of Zemlin, Stephen, the usurping King, retired, and dyed. From hence we passed by water unto Belgrade'.

THE OUTER HEBRIDES*

The Outer Hebrides are one of the few parts of Great Britain that are still inhabited by a homogeneous peasant population. Owing to their comparative isolation and to the fact that Gaelic is the native language of the inhabitants—English being little known until the Education Act of 1872 had been in effective operation for some time—the islands have preserved, although of course not uniformly, many interesting practices, some of which are of considerable antiquity.

The observations of the writer were made mainly in a township in one of the southern Outer Hebrides. The conditions described are by no means applicable throughout the Outer Isles today, and must not be considered typical. At the same time, they are representative of a way of living which, in slightly varying forms, is well within memory throughout the Isles.

A long period of residence in this particular township gave the opportunity to acquire, amongst other things, much information about the economic organization of life there, a kind of organization which is now everywhere in decay, but which still persists in this particular locality with some vigour, owing to its comparative remoteness (it had no proper road, and was really only accessible by small boats) and the consequent difficulty of transport and communication. Strangers were seldom seen there. In consequence of this isolation, the inhabitants were unusually interdependent. Spontaneous co-operation in various kinds of work, and what may be called rural industry, were carried on to an extent that cannot be found anywhere in the country on the mainland.

There are eight cottages in this township, each with a croft of about 5 acres of poor and often badly drained ground, besides hill-pasture. Each cottage had one to three cows, with or without calves, 6 to 50 sheep (though some had none); also poultry. Pigs are not kept. None of the inhabitants had yet been able to avail themselves of the loans that are made by the Board of Agriculture for housing, with the result that

* Mrs Campbell's notes may be regarded as supplementing Dr Curwen's article on pp. 261-89 of this number for they give first-hand information about local life in the Hebrides with which only a resident can be familiar.

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the cottages were all of the old-fashioned type ; not, it is true, of the primitive black-house type, of which a few survive elsewhere, with the fire in the middle of the floor and a hole in the roof to let out the smoke ; but thatched houses with three rooms, usually with a fireplace at each end of the house. Some of the houses had had American stoves installed recently in place of the open fires in the kitchens ; the improvement is a doubtful one. The diet remains the same as before ; boiled potatoes, salt herring, scones and tea. The walls are made of double layers of stone, the interstices being filled with small stones or earth. Small stones are considered preferable, as rats can find a place in an earth-filling.

The thatch is put on in the following manner. The rafters are covered with sods of turf (*sgrathan*) with the grass on the outside, as for shingling. The thatch is then put on top in a way that prevents leaking. It is very important that the thatcher should not put his foot or any appreciable weight on the roof, as this might break the sods underneath. The thatch used is the rush or bent grass ; sometimes bracken is laid over it. These houses are warm in winter and often more comfortable than they appear from the outside. The thickness of the walls and the low height of the houses make the winter gales much less felt than in a more modern building.

The soil is very peaty ; it suffers from constant cropping and a lack of lime. Cow dung, peat ashes, and (most important of all) sea-weed are the manures used. The crops grown are oats (for animal consumption), potatoes, turnips, and a few cabbages. The work involved in raising them is comparatively arduous. The spring work begins with cutting the seaweed ; it is accessible only at spring tides, and is cut with a toothed sickle (*corran gearraidh*). The work of cutting and carrying is strenuous enough, particularly in cold windy weather. After cutting at low tide, the seaweed is secured by ropes (*maoisean*) ; the rising tide then floats the bundles in, when they are secured and carried to the fields in baskets, usually by hand. The seaweed is spread over the ground evenly. On the oat land, the earth is turned about three weeks after the seaweed has been laid ; the lumps are pounded by a wooden rake and the whole is then harrowed by hand, and the oats are hand sown.

The potatoes are planted with a dibble in lazy beds (*feannagan*). The seaweed is laid in strips 3 feet broad and 2 feet apart, and the intervening turf is turned back over it with a spade or *caschrom* (the old native wooden implement). It is less than 200 years since the potato was

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introduced into the Outer Isles ; now it is an essential feature of their rural economy.

The work of cutting and winning the seaweed is done co-operatively as is that of getting the peats, which are cut and set to dry as soon as the spring work is over. The whole township uses nothing but peat for fuel. April and May are thus the busiest months as far as the land is concerned, 'spring work' (*obair an earraich*) taking up everybody's time. In the autumn the lifting of the potatoes is often done co-operatively also.

The sheep are not sold off the island, the cost of transport being so great, but are slaughtered and consumed locally. The wool is spun into yarn for tweeds, blankets, and jerseys on the spinning wheels, of which there is one in nearly every cottage. The cloth is usually dyed with local dyes made from crotal, heather tops, iris, and water-lily roots. Of all the agricultural produce, almost the only thing disposed of for cash is the cattle, which are sold to dealers from the mainland at the cattle sales (*féilleán*) which take place once a year. The prices are often unsatisfactory, partly owing to the high steamer freights, while 'rings' are complained of. The remaining cash income of the crofters is made up from the sale of lobsters (a good price would be 1s. per lobster to the fishermen) and of herring (when caught in sufficient quantities). A good many lythe and saythe are caught for local consumption. Many households receive regular remittances from members of the family employed in the Merchant Service or on the mainland or in Canada or the United States. This income naturally varies with the general level of industrial prosperity, and has recently been much reduced. The township where the writer stayed not being on the Atlantic side of the island, there was no income from the kelp, which until a year or two ago was collected and burnt as a source of iodine. The estate handled the transaction and the money earned was offset against the crofter's rents.

Apart from these sources of income, there is an extensive system of barter with the local merchant, who takes eggs, butter, fish, sheep and calves in exchange for tea, meal, manufactured clothes, lamps, etc. The price of such imports is comparatively high, but the pressure of 'fashion' is felt even here.

The rent of the holdings is about 35 to 40 shillings a year. The economic system, which runs counter to the 'division of labour' is regrettably precarious. The land is obviously marginal land, and in the absence of resettlement schemes it is impossible for any of the crofters to

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hope ever to acquire a better holding, even though on other islands, and on the mainland, there is better land unoccupied.

The Outer Hebrides are almost the last home of a real oral literature in Great Britain. This literature comprises songs (many of which are labour songs, sung while rowing or when waulking cloth), stories, local traditions, and cures. Some of the songs and stories relate events of over 200 years ago. Martin Martin in 1695 reported that Fergus Beaton, the native doctor of South Uist, was in possession of 'the following ancient Irish manuscripts in the Irish character; to wit, Avicenna, Averroes, Joannes de Vigo, Bernardus Gordonus, and several volumes of Hippocrates', so perhaps the traditional cures now used may have a very respectable background. How far these are related to the methods of the above physicians would be an interesting subject for research by someone who knows both Gaelic and medicine. Many of the cures are of course for sicknesses in animals. Gaelic is the habitual language of all the inhabitants of the township where the writer stayed, young and old; but new articles of recent importation tend to be only known by their English names. The coming of the first motor car to the island, for example, meant the introduction of a whole vocabulary of English technical words for which no Gaelic equivalents were known. In the township itself, English influence is otherwise little felt, and the Gaelic oral literature maintains itself as the principal source of entertainment. M. S. CAMPBELL.

FLIGHT OF LEARNING TO THE WEST.

In his article on the origins of Hiberno-Saxon art (ANTIQUITY, 1934, VIII, 50), Mr A. W. Clapham suggested that certain influences, including the 'chip-carving' style, might have reached Ireland from Gaul through the emigration of the learned and upper classes fleeing before the waves of barbarian invasion. One of the chief evidences for this emigration is a curious passage irrelevantly interpolated in the Leyden Glossary, which survives in a 12th century manuscript. It reads as follows in translation:—

'The Huns, who are the offspring of an infamous union, *i.e.* of demons, after they had found their way by the guidance of a hind through the Maeotic marshes, attacked the Goths, whom they terrified exceedingly because of the unlooked-for horror which they inspired. From them the devastation of the whole empire took its beginning, and it was completed by Huns and Vandals (Guandalis), Goths and Alans, at whose devastation all the learned men on this side of the sea took flight, and in transmarine parts, namely, in Ireland (Hiberia) and wherever they betook themselves, brought about a very great increase of learning to the inhabitants of those regions'.

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These events took place during the second half of the 5th century.

Commenting on it Dr Kenney¹ says :—

‘ It is reasonably certain that the original of this extract was written in Gaul in the sixth or seventh century and represents a tradition then held regarding the decline of learning on the continent and its advance in Ireland. It is the only reference among our scanty sources to the flight of a portion of the upper classes across the western sea to escape the barbarian terror ; but that such a movement took place in at least a small measure would be, in view of the general situation, a not unnatural inference. It was made by d’Arbois de Jubainville, who, seemingly, never heard of the Leyden document. But the words of the text point to an exodus on a considerable scale, and have been accepted as evidence thereof by Zimmer and Meyer, who see in it the explanation of much that is otherwise obscure in early Irish history. Among specific facts which derive a peculiar significance in the light of this record are the following : (1) the occurrence of the word “Bordgal”—the Irish form of *Burdigala*, Bordeaux—as a place-name in Westmeath and in Kilkenny, and also as a common noun in the sense of “meeting-place, place of assembly”, (2) the implication in the *Confession of Patricius*—a contemporary of these Gallic *émigrés*—of the presence in Ireland of a body of scholars well educated in the Latin tongue who regarded with scorn the illiteracy of the saint and even questioned the legitimacy of his mission : (3) the Irish origin of the *Hisperica Famina* : (4) the traces in early Irish writings of the influence of late Gallo-Latin literature’.

Early trade connexions between Ireland and Gaul are well established.² Among Irish exports were dogs³ ; it was with a ship-load of these that St. Patrick escaped from his early servitude in Ireland ; and among the imports was wine, such as that brought to St. Ciaran at Clonmacnoise about the middle of the 6th century. It was perhaps from this source that came that strange recent discovery of an amphora fished up in the Atlantic off south-western Ireland (*Journ. Roman Studies*, 1934, XXIV, 220–1, pl. 20 ; *ANTIQUITY*, 1935, IX, 352).

O.G.S.C.

CORRIGENDUM

A mysterious typographical ‘mishap’ caused an absurd reading in Dr Curwen’s article in our June number. Page 152, line 2, should read—

when dried in an oven there was less flattening but no angular fragments.

¹ *The Sources for the Early History of Ireland*, by J. F. Kenney, New York, 1929, 142–3.

² See my chapter ‘Western Sea-ways’ in *Custom is King*, 1936.

³ Irish hunting-dogs reached Rome in the 4th century A.D. (Symmachus, Ep. II ; Kenney, p. 137), and ‘Celtic’ hunting-dogs, from Britain or Ireland, were exported thence before the Roman conquest (Strabo).

Reviews

URGESCHICHTE KAUKASIENS von den Anfängen seiner Besiedlung bis in die Zeit seiner frühen Metallurgie. By FRANZ HANČAR, Vienna: Anton Schroll and Co., 1937. pp. 448 and 56 plates. RM. 36.

Caucasian archaeology always fascinates West Europeans both because of the intrinsic charm and spectacular wealth of the Metal Age finds, and because the region lies on the frontier between Europe and Hither Asia and has been claimed as the cradle of intelligent metallurgy if not of the 'Aryans' themselves. Since the war so much has been written about it that names like Maikop and Koban are familiar even to English and American readers. But all attempts to present and interpret Caucasian prehistory have been handicapped both by the inadequacy of the older excavations and their publication, and also by formidable linguistic difficulties. The former defect can only be compensated by more scientific digging. The latter may be said to have been removed by Dr Hančar's book. With a complete mastery of the Russian language, he has collected and summarized all the relevant literature down to 1936 with extraordinary thoroughness and lucidity. Every significant detail from the older reports has been duly repeated and illuminatingly discussed; a large and well-chosen selection of the published objects has been reproduced, as well as in the original reports. The student of Caucasian prehistory need no longer go hunting for the rare and unintelligible volumes of *Otchets* and *Izvestiyas* since the relevant passages are all condensed into these 400 pages.

Furthermore Hančar summarizes at length the views of most authorities who have written on the chronology and interpretation of Caucasian monuments and relics. In all cases that I can check he has succeeded in presenting these divergent views with admirable fairness, happily emphasizing the crucial points in the arguments. In particular he outlines sympathetically but not dogmatically the interpretations of archaeological data current in the U.S.S.R. today. Nowhere can one obtain such a good idea of the applications of Marxism-Leninism to prehistory and of its fruits.

Half the book is devoted to the palaeolithic and mesolithic phases in Cis- and Trans-Caucasia and also in the Crimea. The main facts have been already made accessible in West European languages by vol. v of the Transactions of the Conference of the Association for the Study of the Quaternary Period in

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Europe (ANTIQUITY, 1936, x, 242). Hančar's book is to be welcomed not only as a substitute for this volume, that is even harder to obtain than it is to cite, but as a supplement containing fresh facts and articles and giving fuller Marxist-Leninist interpretations. We read here for the first time of an attempt by Myrchink and V. I. Gromov to transfer the Mousterian so that it straddles the Rissian instead of the Würmian, of a mouflon-like sheep in the 'Tardenoisian' of Fatma-Koba in Crimea and the identification in 'Azilian' horizons of 'two kinds of tame dog or rather creatures, once belonging to the wolf or jackal species, in the first stages of domestication'. The principal sites and their relics are first described, then the interpretation of the phenomena by Russian archaeologists is set forth.

As is well-known, Soviet archaeologists have been rather dogmatically evolutionist and anti-migrationist. This dogmatism is now denounced as sabotage. De Mortillet's names for palaeolithic periods are employed in a purely chronological sense denoting stages in an evolutionary sequence, as when they were first devised. Even the Neandertaloids are not relegated to an aberrant branch of the human stem that turned up a blind alley and became extinct, but accepted as a phase in the evolution of *Homo sapiens*. (Of course something like this view is coming into fashion even in the West in light of the Palestine discoveries). The earliest inhabitants of Crimea-Cis-Caucasia in late Riss-Würm times (rejecting the Myrchink-Gromov scheme) appear already specialized for hunting big mammals like mammoth and *Bos primigenius*, and equipped with flint tools adjusted above all for killing and dressing such. (Efimenko thinks that 'points' and 'D scrapers' are respectively men's and women's knives and thus imply a sexual division of labour). Living in small isolated communities and *ipso facto* condemned to endogamy they suffered cultural stagnation and physical degeneration. But with the onset of glacial conditions, represented by the first appearance of reindeer, Arctic fox, etc., in the Aurignacian of Syuren, men were obliged to establish permanent winter quarters and make provision for the bad seasons by intensifying the exploitation of their environment. Males become highly trained hunters devoted almost continually to the chase. The women, left in the camp, come thereby to occupy 'the productive centre of the primitive community'. (Efimenko would find in this circumstance the economic basis of the conceptions underlying the female statuettes which by the way are conspicuously absent from the Upper Palaeolithic of the Caucasus and Crimea). More permanent settlement increases opportunity for contact between groups permitting of exogamy and an interchange of ideas. With the return of temperate conditions hunting loses its exclusive role in the economy as berries, nuts, grubs and fishes become available. The dog was tamed just when wild boar and venison became prominent

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in Crimean menus; dogs would be particularly helpful in catching such game, but were themselves sometimes eaten. In more familiar language this means that the 'Mousterian' cultures of Kiik Koba, Chokurcha and Ilskaya are anterior to the maximum of the Würm glaciation; that coincides with the appearance of an Early Aurignacian in Syuren I, succeeded by a classical Middle Aurignacian. Then comes the 'Azilian'; there is no counterpart of the Late Aurignacian and Magdalenian. The Azilian according to Bonch-Osmolovski evolved directly into a Tardenoisian while the Upper Azilian itself was closely related to the Swiderian. Hančar wisely offers no explanation for these divergences from more familiar sequences.

Continuity between the Old Stone Age and the New cannot yet be established in the Caucasus. In post-palaeolithic times Hančar proposes the following sequence:—

Neolithic	..	Nalchik Stage		
		Kuban Stage	Maikop	} Phase
			Novosvodobnaya	
			Vozdvizhenskaya	
Copper	..	Kuban-Terek Stage : Phase 1		
Age			2	
			3	

The first stage has not hitherto been recognized by Western European prehistorians. It is represented primarily by the low mound at Nalchik that covered 130 contracted skeletons, all stained with ochre. Grave goods comprised the teeth of wild animals, boars' tusks, a female statuette in stone, stone bracelets, one copper ring and a carnelian bead. An adjacent settlement yielded 'coarse round-bottomed pots, rubbers' (? for grain), flint arrows-heads but no bones of domestic animals. Soviet archaeologists see in Nalchik remains of a gentile society not yet engaged in stockbreeding and probably pure food-gatherers. The analogy to Mariupol on the Sea of Azov is patent, but in my opinion it remains to be proven that Nalchik is not the cemetery of poorer contemporaries of the rich men of Maikop and Novosvodobnaya'. (Novosvodobnaya is the correct designation of the kurgans usually called Tsarevskaya—which should be Tsarskaya anyway).

Maikop, the richest of all the burials, is put at the head of the Copper Age series for the reasons advanced by Yessen in his (Russian) 'History of ancient Metallurgy in the Caucasus'. The abrupt rise of such wealth and its technological and economic preconditions is caused by 'trade with the economic world of Hither Asia and its influence on productive processes'. Maikop is particularly rich in imported materials, including lapis lazuli from Iran, meerschaum from

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Anatolia and turquoise. But these rich graves should not, according to Soviet archaeologists, be termed royal; they may be attributed to tribal elders or perhaps priests. (A new point about the Maikop silver vases is that the animals depicted thereon include *Bos primigenius* and *Bos balticus*, a domestic pig, a goat and a tame panther; a feature for comparison with British barrows is a ring-wall round the grave under the Maikop barrow and under Svodobnaya II, while circular fosses are common in south Russian barrows).

With the Kuban-Terek stage the area served by the systematic distribution of metal expands while foreign imports cease. Local metallurgists are beginning to produce for a local market while the diffusion of Kuban-Terek types—such as hammer-pins—across the Volga steppes points to the opening up of the South Ural ores. The number of bronzes deposited in the tombs is now greatly restricted, perhaps because private property is now assuming the form of capital—i.e., flocks and herds. As time goes on the number of animal bones in the tombs increases, men have more and richer grave-goods than women, female figurines cease to figure in the burial inventory. Marxism-Leninism interprets these phenomena as reflexions of the change over from a matriarchal to a patriarchal organization of gentile society.

Hančar discusses in great detail the problems of the relation of the Copper Age Caucasian cultures to those of northern and central Europe and of their absolute and relative age. He summarizes the arguments for all the proposed chronologies from that of Smirnov, putting the whole series in the 8th century to that of A. V. Schmidt according to whom the Kuban phase began about 3000 B.C. He himself on the strength of analogies with Hissar III in Iran favours rather the end of the third millennium. He rejects the explanation of the Kuban culture by a folk-migration 'i.e., groups of colonists seeking new land who had transplanted to the Caucasus their mode of life, economic and social organization and means of production'. The Myres-Peake-Childe hypothesis is equally rejected as is the very original thesis of Krichevskiy that Indo-Germanism is merely a stage in 'universal and regular social evolution', corresponding to the transition from matriarchy to patriarchy. It must be insisted that our knowledge of the South Russian Copper Age is equivalent to what we should know of the British Bronze Age if we had only the bronzes and ornaments from our barrows without any pottery save say incense cups. It is unlucky that Dr Hančar was apparently able to visit personally only the museums of Moscow and Leningrad. In only seven cases has he been able to secure original photographs; for the rest he has had to copy often inferior reproductions from Russian journals. A further misfortune was that the 'Royal Tombs' of Alaca in Anatolia which contain all the types of hammer-pin characteristic of the Kuban-Terek stage were discovered only after the book was printed; they affect not only the

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absolute chronology but the whole question of the economic development within this phase. Accordingly Hančar has not been able to solve finally the basic problems of Caucasian prehistory. He has collected and arranged scientifically the material essential for their solution. V. GORDON CHILDE.

LES DECOUVERTES DE RAS SHAMRA ET L'ANCIEN TESTAMENT.

By RENÉ DUSSAUD. *Paris: Paul Geuthner, 1937. pp. 129. 30 francs.*

M. Dussaud has earned the gratitude of all students of the ancient Near East by his compact and beautifully printed sketch of the discoveries made since 1929 at Râs esh-Shamrah, ancient Ugarit, on the coast of northern Syria. The contents of the book were given as lectures at Oxford University, and in their present form, enriched by copious notes and additions, they well illustrate the level of knowledge in September 1936. The numerous pen-and-ink drawings aid the reader to visualize the archaeological and epigraphical material, though some have been so reduced as to efface outlines.

The author is equipped as few scholars are to give a synthesis of the discoveries of M. Schaeffer at Ugarit. In the first place, he has been the guiding genius behind the undertaking since its beginning, and he has a first-hand knowledge of most of the excavated material. In the second place, he controls both the comparative archaeological and the documentary side; a long list of books and papers on ancient Phoenicia, Syria, and Palestine since 1903 attest his continued research in the field. He also possesses the instinct for synthesis to a rare degree.

M. Dussaud would be the last to insist that this sketch is in any sense definitive. He has himself set an admirable example of receptivity to new conclusions, even when they upset his own most cherished hypotheses; we need only mention his change of view about the origin of the Phoenician alphabet and about the name of Râs esh-Shamrah in antiquity. Our criticisms are intended to serve as a modest supplement to his book, and in no way as an attempt to undermine it.

The chronology of the site, after the first seven campaigns of Schaeffer, is treated on pp. 9-33; cf. especially the tables on pp. 10 and 25. The date of the fall of the city, at the end of Stratum I, is almost certainly to be placed somewhere in the first half of the twelfth century B.C., presumably shortly before the defeat of the Sea Peoples by Ramesses III (c. 1188 B.C.), with which it is connected most reasonably by Schaeffer (*Illustrated London News*, 20 Feb. 1937, p. 294). Dussaud's suggestion that it may have been destroyed by Tiglathpileser I (present date c. 1109-1082 B.C.) is both archaeologically and historically improbable, especially since the Assyrian king never mentions the place in his extant inscriptions. Against the late date is the fact that no pottery

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of characteristically Iron I type seems to have been found on the site—certainly none has been published and the reviewer has seen none in his visits to the site and to the museums where pottery from the site is stored. It is interesting to note that the execution of the stela from the last phase of Ugarit published by Schaeffer (*Ill. London News*, 20 Feb. 1937, p. 293), resembles that of the Tell Halâf orthostats (in the reviewer's opinion from the 12th and 11th centuries) more closely than does that of any Syrian monument yet found. When combined with the negative evidence of Mallowan's excavations at Chagar Bazar, this observation should give the *coup de grâce* to the high chronology of Halâf (see below).

The second phase of Stratum I extends back from the late 13th century to about the year 1365 B.C., when Ugarit was partly destroyed by fire (see the reviewer's treatment of Amarna Letter 151 in the last page of a forthcoming paper in *Jour. Egypt. Arch.*, vol. XXIII). This stratum is characterized by an abundance of Mycenaean pottery (L.H. III). The first phase of Stratum I covers the preceding century or a little more; from its ruins were recovered the tablets belonging to the temple-library, which thus antedate the year 1365 B.C., as pointed out by the reviewer repeatedly (cf. *Jour. Pal. Or. Soc.*, 1932, p. 185; *Bull. Am. Sch. Or. Res.*, no. 63, p. 26). King Niqmedas (for the reading see *Bull. Am. Sch. Or. Res.*, no. 63, p. 24, and cf. Dussaud, p. 122), under whom most of the tablets seem to have been written, flourished about 1500, toward the end of Stratum II, in the débris of which a document from his reign was discovered. The latter stratum covers the middle and recent part of Middle Bronze, and extends from before 1900 to c. 1500 B.C. or a little later. Since no caliciform or 'goblet' ware seems to have been discovered at the site, and since the following transitional phase (Tell ej-Judeideh VIII and Tell Tūqân, latest occupation) is also apparently missing, there would seem to have been no settlement at our site between c. 2400 and the twentieth century B.C. The caliciform series is very well represented at the neighbouring site of Tell Sūkâs, where Forrer made soundings in 1934, so there can be no question that Ugarit lay within the territory of its diffusion. A certain restricted occupation in the first half of the third millennium is attested by the finds of the seventh campaign (cf. *Syria*, xvii, 128, and note that Tell Beit Mirsim J belongs to a later phase of the same age). Otherwise there is a great lacuna covering the whole of the third millennium and probably the entire second half of the fourth, a lacuna filled in by the soundings of Forrer at the near-by sites of Qal'at er-Rûs and Tell Sūkâs, the pottery of which will be fully treated by Dr Ehrich in her forthcoming dissertation.

The chalcolithic and neolithic strata III-V must now be pushed far beyond the first date given (before 2000), and the date provisionally set by Dussaud for

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the end of III (middle of the third millennium, p. 17), must now be raised to the middle of the fourth millennium. There is no room in this review for adequate demonstration, but the facts are now conclusive. Stratum III shows sufficient resemblance to the Obeidian and Samarran cultures of Mesopotamia to justify a provisional date in the first half of the fourth millennium, while IV is even more like the Halafian of northern Mesopotamia, which must be assigned entirely to the fifth millennium. The unpainted ware of V belongs to a still higher antiquity (before 4500 at the latest), corresponding to stratum XIV at Tell ej-Judeideh (*Am. Jour. Arch.*, 1937, p. 11).

Having devoted so much space to the important subject of chronology, we shall limit our further observations to the following remarks. On pp. 47-50 there is a most judicious account of the decipherment, which strikes a happy mean between the extreme positions of the first decipherer, the late Prof. Hans Bauer, and M. Virolleaud, who like Rawlinson has claimed more of the honour of the initial success than he justly deserves. We hasten to add that both Rawlinson and Virolleaud unconsciously distorted the facts by a familiar psychological process; history, however, will inevitably support their rivals, just as it upholds Newton and Young against Leibnitz and Fresnel. The following account of the phonology and grammar is not so happy; the author should have followed Friedrich, Ginsberg, and Montgomery-Harris—not to mention the reviewer. The account of Ugaritic mythological literature is very good; Dussaud is at his best in this field, where he follows the excellent beginning which he made in his *Notes de mythologie syrienne* (1903). With the author's treatment of the original home of the Phoenicians in the light of the tablets from Ugarit (pp. 55-63) and the supposed parallels between Ugaritic and Israelite saga (pp. 96-109) the reviewer fails completely to agree; for details reference may provisionally be made to *Bull. Am. Sch. Or. Res.*, nos. 55, p. 26 f., 63, pp. 27-32; *Jour. Pal. Or. Soc.*, XIV, 133-140).

Finally, we wish to express our hearty approval of M. Dussaud's words (p. 8; cf. pp. 116 f.): 'The results which the school of Wellhausen thought it had reached, must be entirely reconsidered in the light of the new documentation. The school has under-estimated the value of the biblical texts, and even the reaction of Gunkel was insufficient'.

W. F. ALBRIGHT.

DER OBELISK UND SEINE BASIS AUF DEM HIPPODROM ZU KONSTANTINOPEL. By GERDA BRUNS. *Archäologische Institut des deutschen Reiches, Abteilung Istanbul*. Istanbul, 1936. pp. 91, 89 plates. Price not stated.

Tourists to Constantinople during the last seven hundred years have seen the great Obelisk of Theodosius in the Atmeidan and marvelled at it. From

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the time of the Russian pilgrims in the 13th and 14th centuries there has been continuous comment on it.

But, despite the fact that on its basis are inscriptions in Latin and Greek describing the occasion and manner of its erection, it presents more problems than any other single monument in Istanbul. For its base consists of two parts, the lower a marble block depicting in relief races in the Hippodrome and the column itself, together with the process of its uplifting and the two inscriptions, the upper one a totally distinct block with reliefs on all four sides. A cursory glance leaves no doubt that the style and date of these two series of carvings differ profoundly. Yet both must have been brought together at the moment when the obelisk was hoisted to the vertical, and it is quite certain that the lower relief must have been cut at the time when the obelisk was lying in the Hippodrome, for it is, as it were, a contemporary view of it.

Yet we know neither the exact date of the erection, nor the date of either the upper or the lower reliefs. Nor do we know the meaning of the ceremonial represented on the upper relief, nor the names of the emperors and officials there depicted.

Walters and Dalton thought that the upper reliefs were of the time of Constantine, derived from some earlier monument. Rodenwaldt and others attribute them to the time of Theodosius. Delbrück, detecting three Augusti and two Princes on the relief, decides on the year 369.

Our only clue is to be found in the Greek and Latin inscriptions. These follow the usual tendency of Byzantine dedications and are about as explicit of the events in question as the 'light' of a cross-word puzzle:

'Of lords serene a stubborn subject once, bidden to bear the palm to tyrants also that have met their doom—all yields to Theodosius and his undying issue—so conquered I in thrice ten days and tamed, was under Proclus' judgship raised to the skies above'.

So runs the Latin inscription. Proclus is our only hint. But in both the Greek and the Latin inscription the name of Proclus is inscribed over an erasure, so even our only hint is wrapped in mystery.

Miss Bruns sets herself the task of tackling the problem. Events, she shows, must be associated with the date of Proclus. She supposes that the actual obelisk reached the Hippodrome in 390, brought from Egypt originally by Julian. Then the foundations of the podium and the relief-block showing, in anticipation, how the engineering feat was done and the inscription mentioning Proclus, were put into position. But in 392 occurred the disgrace and execution of Proclus and the whole work was suspended. The name of the executed man was duly erased from the inscription. Then in 396 Arcadius recognized the innocence of Proclus and had his name recut on the erased surface.

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An artist was then commissioned to carve the upper block with the Imperial scenes, and the work was completed. Theodosius I, Valentinian II, and Arcadius are the Augusti represented, and Honorius and Eucherius the princes.

I must confess to a certain scepticism. All this is mere conjecture, and fails to explain how two reliefs so fundamentally different in style could have been made by Constantinopolitan artists in a period of six years. There is clearly a much wider difference of date. We have absolutely no criteria of dates for sculpture in the 4th century. The lower relief must certainly date to the period 390-396 on internal evidence, and there are other similar reliefs in the Istanbul museum. But the upper relief seems to me much earlier. It is closer to the style of the Column of Theodosius, built in 386, of which fragments were found in 1927. It may be even earlier. Almost certainly it was originally carved for some other monument. The four inserted granite blocks at the corners suggest that it required these additions to adapt it to this monument.

But Miss Bruns' monograph is the only complete survey of the whole problem and deserves the highest praise for its admirable photographs and its orderly marshalling of facts. Her accumulation of illustrations from Turkish and European sources adds to the value of her work.

S. CASSON.

THE ROMANO-BRITISH SETTLEMENT AT THATCHAM-NEWTON, BERKSHIRE, *by* W. E. HARRIS. (Reprinted from the Newbury District Field Club Transactions, 1937).

We have selected this article for special mention (out of many others received, of no lesser archaeological merit) because it sets an example—both of original record and of succinct publication—that should be imitated elsewhere. Before 1921, when Mr Harris went to live there and began his investigations, there was no real justification for identifying SPINÆ with Thatcham-Newton—indeed there was virtually no evidence at all of Roman occupation. Two collapsed shafts, suspected to be wells, had been reported by the side of the continuation, towards Shaw, of the Roman road which I had discovered before the war; but the age was unknown. Since 1921 Mr Harris has observed, and recorded with exemplary care, the sites of several others, together with other remains of permanent dwellings. Thanks to him they are now safely recorded upon the published 25-inch Ordnance Maps. But the individual discoveries have been noted from time to time in not very accessible articles, and it is a real boon to the future historian of the Newbury district to have here a resumé of the evidence from the hand of the person best acquainted with it. In the past (as readers of Haverfield's invaluable V.C.H. articles know) the compiler has had to piece together an ill-fitting structure from fragments of every kind, some of doubtful authenticity, some whose site was vaguely recorded or whose

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associations were suspect. All this has been saved here by this contemporary synthesis of the evidence.

As regards the identification, we think that, as Mr Harris (quoting Beeke, 1806) suggests, 'the name SPINAE, meaning Thorns, might have originally applied to an area of thorny country of sufficient size to include both Thatcham and Speen, the name only surviving in the western part'. It may thus have been the name for the gravel commons over which the Roman road passed for several miles; the natural vegetation of such soil including (besides birch) hawthorn and furze, both thorny shrubs. The name would naturally survive only where, as at Speen and Speenhamlands (formerly Spinhamlands), an ancient settlement survived. (Thatcham itself lies just off the Roman road, a little beyond Thatcham-Newton eastwards). Other instances of such short-distance name-shifts are known to occur (Mæthelgareshurh, now Stow on the Wold, survives as the name of the village of Maugersbury; the Roman village of Letocetum was succeeded by the medieval town now called Lichfield, with intermediate names of Luit Coyt and Lyecidfelth; Sliaswic, formerly applied to the Viking town now called Haithabu, has survived as the name of the adjacent modern town of Schleswig, see OFFA, 1937, p. 111).

There are a few trivial errors in those sections where the writer is not on his own ground, particularly in the identifications of the Nennian 'cairs' (see *ANTIQUITY*, XII, 1938, 44-55 which, of course, appeared after his article was printed). The form 'Gloui', hitherto given for Gloucester, is not the reading of Harleian MS. 3859, the best source, which is quite certainly Gloiu, and is printed as such on the Ordnance Survey Map of Britain in the Dark Ages (South Sheet). But these are trifles that in no way detract from the value of the whole. Both the article and the research behind it are excellent instances of the valuable work that can be accomplished by a single individual, content to record *facts* while they are available and before it is too late to do so. O.G.S.C.

COMMUNICATION HAS BEEN ESTABLISHED. By ASTLEY J. H. GOODWIN. *Methuen*, 1937. pp. 268, 2 plates and 15 text-figs. 10s 6d.

This is a popular account of transport by land and sea in all ages and climes. The plan is well conceived and in general is carried out well, but the very vastness of the subject makes occasional error inevitable. The following criticism is given in the hope that it may prove useful when the work is revised preparatory to a second edition, which its outstanding merit certainly deserves. The chapters on prehistoric migrations and on ancient navigation are the least satisfactory and much emendation is necessary.

In respect to generalizations, the old fallacy that the Phoenicians held for

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long a carrying trade down the Red Sea and on to the Persian Gulf and India is repeated (p. 133) in spite of their lack of naval bases in Asiatic waters. Seafaring in ships of their own was limited to the Mediterranean; only on occasions when special expeditions were required by the rulers of Egypt and by King Solomon did they have opportunity to penetrate into the Indian Ocean in ships under their own command. Similarly, far too much credit is given to the Semitic Arabs for early seafaring exploits and too little to the Chinese, while none is given to the Persians and to the Indonesian sailors of the first millennium of our era. The Arabs, properly so-called, were not seamen by nature; they learned navigation from the Persians, as proved by the many Persian terms incorporated in their nautical vocabulary and by the use of the Persian year instead of the Muhammadan one in their 'Nautical Instructions' until the 16th century.

It is a grave injustice to the Chinese to say (p. 163) that they have never been a great seafaring folk. How is this possible when we have Arab authority for the statement that China regularly despatched fleets of junks to the Euphrates as early as the 5th century? Of later trading to the Persian Gulf and to India there is overwhelming evidence. In 851 the merchant Sulayman wrote that the greatest part of the Chinese fleet loaded their return cargoes at Siraf on the Persian side of the Gulf, and in the 14th century we find Ibn Batuta taking passage to China in a Chinese junk at Calicut—with no mention of Arab vessels engaged in this traffic. Nor must the invasion and conquest of Ceylon in the beginning of the 15th century by a Chinese war-fleet be forgotten. An omission that should also be remedied concerns the shipping and migration movements of the Indonesians. The sculptured panels of Boro Budur, 8th or 9th century, show great two-masted ships, fitted with outriggers. In ships of this type must have sailed the Sumatran and Javanese 'Pilgrim Fathers' who colonized the great isle of Madagascar and spread the use of the outrigger along the east coast of Africa.

A few of the actual errors may be mentioned. Fig. xv purports to be an 'Outrigger from the Solomon Islands'; it is a typical outrigger canoe of Kaniet, in the Bismarck Archipelago. Except at the north and south ends of the Solomons, the island canoes are characteristically *unprovided* with outriggers. On p. 99 the remarkable statement is made that coracles covered with ox-skins are still to be seen in England, and while the journey of three Irish pilgrims in a coracle from Ireland to Cornwall is mentioned, the far more important voyages of Saints Columba and Brendan are ignored. The figures of methods of 'sewing' planks together (p. 114) are misleading also, for the usual method is to pass the cord several times through vertically opposed holes in adjoining planks and then to pass obliquely to the next pair.

JAMES HORNELL.

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A CEMETERY AT SHUDY CAMPS, CAMBRIDGESHIRE. Compiled and illustrated by T. C. LETHBRIDGE. Cambridge Antiquarian Society: quarto publications, 1936. pp. 38 with illustrations and plans. 5s.

This is the second of the 'late' Saxon cemeteries excavated by Mr Lethbridge, and, as in the case of the first (Burwell), his published report is a most valuable paper, very cleverly and aptly illustrated by the author. Moreover, as those who know Mr Lethbridge's work will expect, this account is generously peppered with the acute and lively observations that flow so freely from his candid pen. The finds themselves were not very rich; but what there was, was interesting, and the wooden bed (Grave 29) deserves to become well-known; for Mr Lethbridge's reconstruction of an imposing piece of furniture out of an enigmatic iron-fitting is both ingenious and plausible. A gold-mounted glass bead is another rarity, and there were also five important pottery vessels that are a useful contribution to the magnificent collection of Saxon ceramics at Cambridge. The Shudy Camps folk were, however, a poor lot, and I confess that they seem to me to have been backward and superstitious barbarians of the most depressing kind. Why Mr Lethbridge should maintain that these squalid creatures were Christians, and how he dare imagine that Kentish archaeology is affected by their paltry possessions, are problems that this publication does not satisfactorily solve.

T. D. KENDRICK.

COINAGE AND CURRENCY IN ROMAN BRITAIN. By C. H. V. SUTHERLAND. Oxford University Press, 1937. pp. xii, 184, and 14 plates. 10s 6d.

The short note on the paper cover of this book reminds us that it is just a hundred years since J. Y. Akerman published his *Coins of the Romans relating to Britain*, and calls attention to the difference that that interval has made to these studies. There could hardly be a better introduction for the reader; for attention is at once drawn to what constitutes the main interest of Mr Sutherland's work. He has not just passed once again in review the stock of Roman types that bear on our island history. A book on these lines could not hope to make any very serious advance. He has attempted to follow up new lines of research that have been steadily opening up before the eyes of scholars during the last generation.

A century ago the study of numismatics was in what might be termed a 'pure' state. Coins were very largely studied by and for themselves, without very much reference to other forms of historical evidence. Today, whilst pure numismatics has gained greatly in precision, it is in the application of numismatics to history that the most critical advance has been registered. Mr

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Sutherland's book is an excellent example of the modern applied method, by which the coin is studied less as a coin, simply and solely, than as a piece of historical evidence, related to the sum total of contemporary evidences. His real aim is to give us an account of what the Roman coinage in its bearing on Britain means for the general history of the island. It might perhaps be pleaded that this aim should be more definitely expressed in the title. Subject to this verbal reserve, we can wholeheartedly applaud the book.

The material that we have to handle is Roman coinage circulating in Britain, as revealed in hoards and site-finds. Of this coinage, so far as it is regular, only a very small proportion can actually have been struck in the island. It is not till we come to the 'barbarous' imitations that we can be sure that we are dealing with local work, and, as a rule, we have no great reason to be proud of it then. But the material has an interest and value quite independent of any artistic merit. It preserves for us, in a form hard but not impossible to understand, some record of a stirring history that included such events as the coming of the Romans, the revolts of the Britons, the financial crisis of the 3rd century, the Gallic Empire, Carausius, the great Pictish revolt and the withdrawal of the legions.

It is remarkable how clearly Mr Sutherland enables us at the outset to see the gradual entry of Roman coinage into the island—denarius of the Republic, As of the early Empire, finally silver and even gold in plenty. Later, we see the effects on Britain of the economic landslide of the 3rd century, and the curious reflection of the history of the Gallic Empire in British hoards. The remarkable coinage of that remarkable character, Carausius, receives an attentive and successful study. Finally, we see how the British finds mark the departure of the legions and the long twilight of Romano-British decay.

Two points deserve closer attention—one of rather special, the other of more general interest. In dealing with the second half of the 3rd century A.D. Mr Sutherland finds himself in something of a difficulty. He cannot escape the general evidence that Britain shared the destinies of the Gallic Empire, but he very properly calls attention to evidence from coins that raises doubts of this—evidence, for example, of the arrival of coins of Claudius II and Quintillus in Britain very soon after issue. It seems to us that, while Mr Sutherland reaches a partial solution, the problem really only yields when we admit that many of these hoards were buried much later than is at first apparent and represent correspondingly later conditions of currency.

This brings us to our second point—the much debated, much abused theory of 'coin-drift'. Here Mr Sutherland seems to us to strike a happy mean. He will not postulate that coins normally take a definite period—be it five years or fifty—to travel from the capital to the provinces. He admits the

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probability of very rapid transit in some cases, while arguing with strong conviction for a considerable time-lag in others. We must use a much more modest formula than many that have been suggested. 'Coins travel from central mint to outlying province at a rate that may vary from a few months to a long term of years, the variation depending on circumstances, not indeed beyond control, but requiring to be checked up in each particular case'.

It is not certain that everyone will find Mr Sutherland's book easy reading. It involves too much research in difficult fields for that. But it *is* safe to promise that it will not disappoint anyone who is willing to devote to it the modicum of attention that it demands. In particular, it speaks, beyond the narrow circle of numismatists, to the student of Antiquity. The printing and plates are worthy of a notable contribution to our modern studies of ancient Britain. The price is really moderate.

HAROLD MATTINGLY.

THE MESOLITHIC SETTLEMENT OF NORTHERN EUROPE : a study of the Food-Gathering Peoples of Northern Europe during the early Post-Glacial Period. By J. G. D. CLARK. *Cambridge University Press*, 1936. pp. xvi, 284, 28 plates, 74 text figures, map. 25s.

Mesolithic studies have long been gaining ground. They were given considerable impetus by the Maglemose excavations and, especially, by the discovery of the Tardenoisian culture. Attention has been particularly attracted to the collections of Mesolithic flint-implements, which we have now learnt to distinguish more and more sharply from Neolithic finds. As a result, a rather unwieldy body of literature has accumulated ; in fact, the extensive writings on the Tardenoisian culture alone fill a small library. Our chief need hitherto has been a broad general survey, and this has now been provided for North Europe by Dr. J. G. D. Clark, in a book which is a model of its kind. He is pre-eminently fitted for the task ; for, in Mesolithic research, besides knowledge of prehistory, certain innate qualities are also essential if one is not to be lost among these tiny flint-implements with all their various forms. Even professed prehistorians generally prove unequal to these demands : so few students, old and young alike, possess the powers of observation needed for the study of these little objects, which are too often treated as unimportant, and even the majority of specialists regard it as an impenetrably nebulous subject. But Dr. Clark possesses the necessary gifts to the fullest degree ; he is one of the few European scholars to whom we owe decisive knowledge of the technique of Mesolithic flint-implements.

The book begins with a very clear review of the geological, botanical, and zoological bases of the inquiry, with most valuable results. Dr Clark divides the whole Mesolithic age into three main periods, the pre-Boreal, the Boreal,

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and the Early Atlantic. To the first he assigns the Ahrensburg and Lyngby tanged-point cultures with their connexions. The oldest microliths appear at Ahrensburg, if we omit the evidence of the Hamburg culture. The author has established an important fact, that micro-burins are not in evidence here, and that therefore the notch method was not yet employed in making the microliths. Fortunately he already had at his disposal the earliest finds from Meiendorf, although their original assignation by pollen-analysis had been at fault. With much penetration he regards the Hamburg civilization as ancestral to the Ahrensburg-Lavenstedt culture. On the other hand, he considers the Swiderian as originating in an Aurignacian or Předměstí facies, while 'the flat inverse retouch, typical of so many of the tanged points, is found in Solutrean levels in Jerzmanowska-Höhle'. I venture to assume that there will one day be found in the Swiderian region a group similar to the Hamburg. If we bear in mind that Alfred Rust's finds round Hamburg date only from 1931, we ought to expect important finds also elsewhere. Dr Clark rightly assigns the Norwegian groups Fosna and Komsa to the tanged-point cultures. He agrees with my original suggestion that the tanged-point groups of northern Europe are derived from a northern palaeolithic such as we have in the Hamburg culture.

To the first period also he assigns the greater part of the Lyngby culture ; at the time when he was writing his book, this was the earliest known axe-culture. Here he has an acute discussion of my theory that the axe originated in northern Europe, trying to do full justice both to this and to opposing views. He agrees with me that the Lyngby axe is the oldest hafted axe in Europe, but will not claim definitely that it is the oldest in the world, as I believe. Against me he considers it quite possible that areas will one day be found 'in which a hand-axe civilization of Lower Palaeolithic type evolved directly into an axe-culture of Campignian type'. He continues : 'The area of axeless Upper Palaeolithic civilization is, however, so extensive around Northern Europe that a possible direct evolution in some outlying region of the earth can hardly be invoked to account for the flint axes of period II of the northern Mesolithic'. He thus recognizes that the Lyngby axe is the prototype of the axe.

I should like here to take the opportunity of referring again to the great difficulties in the way of interpreting the hand-axe as an axe in the customary sense, *i.e.*, as a hafted instrument. In the first place, its shape, with its often bulbous butt-end, makes it quite unsuitable for the addition of a haft ; and besides this, these tools show a strong tendency towards a lanceolate pointed type, which is also difficult to reconcile with the idea of an axe-blade, and much rather suggests a dagger. But why assume a haft, when there is so much evidence against its existence ? The discoidal hand-axe also, at the opposite extreme of development, is also against any connexion with the hafted axe. Here we have a

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favourite type of fighting weapon, carried in the bare hand ; its shape is on the average remarkably divergent from that of an axe-blade ; and to interpret it as a hafted axe was a most unfortunate and perilous theory, as the foregoing remarks show, which obviously arose from the natural inclination of earlier archaeologists to credit the oldest men with a knowledge of the axe. The great difficulty in the way of an immediate acceptance of my theory is the fact that an implement of which we can scarcely imagine the most primitive civilization to have been ignorant, should yet not have existed in what is by far the longest period of human activity upon earth. But we may remember that evidence for such axeless civilizations has in fact recently been forthcoming, as I have shown in *Festschrift des Museums für Volkskunde in Hamburg*, 1928.

We owe the author special thanks for his extraordinarily careful work on the civilizations of the Maglemose type in period II. These extend beyond the North Sea to the west as far as Britain. We have here in exemplary form what was particularly needed, namely, a comprehensive examination of the finds from Britain to the Baltic countries. From a methodical arrangement of the many variants of ' harpoons ', Dr Clark comes to the remarkable deduction that certain types such as the Kunda-type, hitherto universally regarded as late, belong in fact to the very oldest. On the other hand, he rightly treats as later local variants the original Mullerupian ' harpoons ' which are practically confined to Zealand. The bone-points with flint-insets may likewise belong to the end of the Maglemosian period, for they too appear to be northern local types. From their absence in Britain, Dr Clark infers that this was caused by the marine transgression between Scandinavia and England, for which a possible date could be approximately ascertained by comparing the types still found in Britain with the later ones that it lacks. From the occurrence of perforated stone maces and the *bohrornament* technique, the use of a bow-drill can be inferred. Paddle-rudders, fishing-nets, and fish-hooks seem also to have appeared newly at this period.

It was to be expected that something new would emerge when the vast mass of Ertebölle flint implements was subjected to a fresh examination by so outstanding an authority. Of special importance is Dr Clark's establishment of the fact that large numbers of burins occur, not only at Bloksbjerg, but also, though previously unobserved on the classic stations of the Ertebölle culture. The Walzenbeil or round-butted stone axe forms an integral part of this culture. The author holds that the sometimes oddly shaped wooden implements found by Thomsen at Brabrand Sö are all throwing-sticks of different forms. While at the outset of development the *Querbeil* (or adze), is most prevalent, in the Ertebölle culture it is very rare. The well-known perforated antler axe, which is found here for the first time, came in only at the *Litorina* maximum. Most

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of the Ertebölle types go back to an earlier civilization : new features are the bone combs and bracelets, and the pottery. Dr Clark also regards the finds from Oldesloe and Gudena as transitional between Maglemose and Ertebölle cultures. The Linhamn, Lihult, and Nöstvet cultures have their origins in period III, but are mainly later. In Britain, the counterpart of the Ertebölle culture is that of Lower Halstow, in north Kent ; unfortunately, only stone implements have survived here. A special type of core axe is known as the ' Thames pick '. Dr Clark explains the considerable divergences between Lower Halstow and Ertebölle as due to the marine transgression, which had meanwhile long since taken place, with the result that the development of stone implements took widely different courses in Denmark and in Britain.

Maglemose art receives a special chapter, and a welcome analysis is given of geometric motives. In the Magdalenian period the naturalistic style was already degenerating towards conventionalization, and in the Maglemose art this process is completed. Dr Clark is not inclined to accept affinities with the conventionalized paintings of Spain. The Arctic rock-engravings probably go back to period II, although most belong to period III or even later. It is impossible, he concludes, for Maglemose art to have been transitional between the Upper Palaeolithic and Arctic groups : it became extinct in the Atlantic period, and we have no evidence that the Arctic group of rock-engravings and sculptures was already in existence before then.

Another chapter deals with the axeless microlithic culture, *i.e.*, those groups of finds which we know as Tardenoisian. In an interesting passage, Dr Clark treats of the existence of Mesolithic civilizations with and without axes, side by side, a phenomenon which much struck me also at the outset of my Mesolithic researches. I have enunciated the theory that the axe-using civilization represented a stage in advance of the axeless, while the Tardenoisian culture was so to speak a palaeolithic civilization-group which survived far into the post-glacial epoch. Originally (in 1927) I treated the existence side by side of a microlithic element of pure Tardenoisian character and of the elements which serve to distinguish the Duvensee and Maglemose groups etc. from the Tardenoisian, as evidence for a mingling of different cultures. At that time the Tardenoisian culture, with its well-developed microlithic element, was sharply contrasted with the axe-civilizations ; this appeared to suggest a genetic connexion between the two groups, and so it was easy to reach the conclusion that the microlithic which also appears in the Maglemose culture-area was a foreign element due to Tardenoisian influence. It was only later that I established the existence of an earlier microlithic in the Ahrensburg civilization, which need not necessarily have been borrowed from a foreign group : and since then I have inclined to the view that microlithic may have developed quite as much locally

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in the North as in other parts of the old world. My conjecture that the North African microlithic groups are not so old as was originally believed, has meanwhile been confirmed by the researches of Vauffrey and Mencke. Therefore it also becomes superfluous to assume that microlithic culture was introduced to Europe by way of north Spain, as Dr Clark still attempts to do. If microlithic is considered as an element common to the Mesolithic civilizations, then the absence of the axe in the Tardenoisian culture is left as the main point of difference between the two groups, Tardenoisian and Maglemose. There are still many other points of divergence, on which Dr Clark also comments; they appear chiefly to lie in the antler and bone implements, which unfortunately do not occur in most of the Tardenoisian finds. Dr Clark views the appearance of the axe simply as conditioned by the change in vegetation. The axe served principally for forestry and consequently appears with the replacement of tundra by forest. Certainly the axe-less Tardenoisian peoples generally lived on sandy soil or in mountains, but the dunes in which their remains are found do not by any means always cover a wide area, and were probably also surrounded by forests, to say nothing of the mountainous country. So that if the axe became a necessary implement to the Maglemose peoples because they lived in forests, the same must also have applied to Tardenoisian man in practically the same way. I too believe that the axe served chiefly for forestry, but should like to feel that it was a chance invention of some man of genius who by this means first made possible the production of large wooden implements, especially for purposes of navigation. I believe therefore, to put it plainly, that the Maglemose civilization was in advance of the other in more than one respect, and that in consequence its peoples found living possible in regions avoided by Tardenoisian man. Tenacious clinging to ancestral ways of life has always been in evidence in very diverse stages of civilization, and still exists today; very probably racial distinctions play their part here, as Dr Clark after all emphasizes, without any need to bring over a foreign people from Africa or Asia Minor. In Europe also racial contrasts, as they seem to be mirrored here, might have been produced by a process of selection over thousands of years.

It is a pity that Dr Clark ended his work at a moment when the later observations of Alfred Rust at Meiendorf and Stellmoor were not yet accessible. But that hardly lessens the intrinsic value of the book. For the worker on the 'mesolithic front' it comprises such an amazing number of good and new observations and penetrating conclusions, besides so many masterly analyses of form-groups, types, combinations, distribution etc.—hitherto little investigated—that it cannot be bettered. The book is one of the most important and delightful publications on prehistory that has appeared during recent years.

G. SCHWANTES*.

* Translated from the German by R. G. Austin.

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SIGILLATA WARES IN THE NEAR EAST : a list of potters' stamps. By J. H. ILLIFFE. *Oxford University Press*, 1936. Reprinted from the *Quarterly of the Department of Antiquities in Palestine*, vol. VI, pp. 4-53. 1s.

Although it has long been recognized that the origin of Arretine ware was to be sought in the Aegean region, the only investigation that has yet been made of a pottery-centre of Terra Sigillata was undertaken by Loescheke at Tschandarli, the port of Pergamon, in 1911. This excavation was too brief and summary to discover actual kilns, which doubtless exist on the site, judging by the extensive tip-heaps of sherds, fragments of moulds, wasters and ashes.

Mr J. H. Iliffe, the Keeper of the Palestine Museum, has rendered a great service to the study of Terra Sigillata found in the Aegean and Eastern Mediterranean areas by classifying the pottery in definite groups (characterized by variations in technique and glaze), by discarding such precise terms as Samian and Pergamene, and by compiling a valuable index of potters' stamps on Terra Sigillata found in the Near East, which forms an excellent basis for future workers in this field as well as a stimulus for arriving at more exact classification and chronology, and also towards the discovery of actual pottery-sites and kilns. As a consequence of Mr Iliffe's work this index has already received much amplification by Mr Howard Comfort ('Supplementary Sigillata Signatures in the Near East', *Journal of the American Oriental Society*, LVIII, 30-60).

Some of the stamps in Mr Iliffe's list are obviously not names of potters, e.g., the acclamations ΚΑΑΑ and ΚΑΙΞΥ (commonly occurring on tombstones, similarly to ET TU) and the words ΔΩΡΟΝ, ΚΕΡΔΟΣ, ΧΑΡΙΣ. The stamps he adduces as Gaulish are either Arretine or Puteolan, and indeed most of his Italian stamps prove to be Puteolan rather than Arretine. The importation of Italian Terra Sigillata to the Near East—a reversal of the original movement—was perhaps due to superior excellence of workmanship in the later period of Arretine ware as compared with Anatolian fabrics at this time, for, as Mr Iliffe remarks, 'the precision and sharpness of the Italian wares is never attained in the East'.

FELIX OSWALD.

Antiquity

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Editorial Notes

NO one would accuse ANTIQUITY of backwardness in asserting the claims of archaeology to be recognized as an important element in general culture. Archaeology has revealed the pedigree of man and traced the evolution of his civilization to its sources. The knowledge thus acquired should form a part of the cultural background of every educated person ; and it should be supplemented by at any rate the rudiments of earth-history. We are still far from the time when education shall have achieved these results, which may be postponed until the present phase of intensive nationalism has produced the inevitable reaction.



Archaeology has completely revolutionized our ideas about man's place in nature and about the origins of culture, just as astronomy has revolutionized our knowledge of the universe. To appreciate this, one has only to compare modern conceptions with the primitive folk-tales that formed the basis of culture a century ago. The positive results are so devastatingly complete that we can afford to consider the limitations of archaeological method with impartiality. When we can discover an Indus civilization, we need not be unduly troubled because we do not know the name of the man who built Stonehenge. Nevertheless, to be perfectly fair, let us admit that at the bottom of our hearts we should all like to know something about him.

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The two methods are admirably illustrated by the story of King Alfred and the Danes. The facts as we have them from historical sources are almost too well known to mention. The Danes began by raiding England, and eventually conquered it and settled there. They were resisted by Alfred, to whose efforts we may ascribe the exclusion of Wessex from that settlement, and the confinement of the Danes to the region northeast of Watling Street. Were we dependent solely upon archaeological evidence, we should know little or nothing of the Danish invasions—a few weapons that might have been imported and some sculptured stones are practically all we have to show. The rare earthworks they constructed are ascribed to them on purely historical grounds ; not one of them has been excavated. We might infer an invasion from the existence of defensive earthworks constructed against them by the Saxons ; but here again the case is hypothetical, for neither have these been excavated. We might know of Alfred as a man who lost a valuable jewel in Somerset ; but there could be nothing in this to associate him in any way with the Danes.





What could archaeology tell us of Caesar's invasion of Britain, or of Alexander's conquests ? It may be argued that it was the subsequent invasion of the Romans that really counted historically, and that there is abundant archaeological evidence of this. But that argument will not hold in the other case, for it was Alexander himself who did all the conquering, and without him it is pretty certain that the influence of Greek culture could never have penetrated those regions. Again, archaeology has so far revealed no traces of the great voyages of discovery of Pytheas and the Phoenician circumnavigation of Africa, of Christopher Columbus and Sir Francis Drake. And what concrete archaeological remains are there of St. Columba's foundation ? Nothing commensurate with his achievements. The great pioneers of human progress elude our grasp through a defect—apparently irremediable—in the nature of our evidence.





On the other hand, archaeology sometimes comes very near to revealing achievements as dramatic in their way as those just mentioned. The Viking grave recently found in Canada, if authentic (see ANTIQUITY, 1938, XII, 232 ; it is still unpublished otherwise) would be proof of

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first contact between the Old World and the New, even if we were not already expecting something of the kind on historical grounds. The foreign stones of Stonehenge testify an undertaking of epic dimensions. But such glimpses are rare. There must have been great pioneers, leaders, discoverers, in all periods, prehistoric as well as later. It is arguable that some of the great figures of history did more harm than good, and the same may be true of the present day. But whatever views we may hold about this, it cannot be denied that they form part of history and that they elude the prehistorian.



Material progress is registered rather by useful inventions and discoveries than by meteoric appearances, by the discovery or invention of fire (and later of matches), pottery, weaving, agriculture, metals, the wheel and all those and other things consequent upon what Professor Gordon Childe has aptly called the First and Second Revolutions (*Man Makes Himself*, 1936). But these were probably communal and gradual processes for the most part, rather than the sudden innovations of a single individual.



Archaeology, in short, enables us to reconstruct, by inference and the creative imagination, the culture of groups. But it stands in constant need of cross-bearings from other directions to establish any given position. When, in America, Professor Douglass applied such cross-bearings by his invention of dendrochronology, it was found that both geological and archaeological dead reckoning was sadly out (*ANTIQUITY*, 1937, XI, 409-26). So too there is constant need of comparative material to check the assumptions of, for example, pot-study, as readers of Mr Casson's article in this number will realize (pp. 464-73).



The Prehistoric Society's excavations at Woodbury have finished for the year and have established many important conclusions. We do not like to anticipate the publication of the Director's preliminary report, which will appear shortly in the Society's Proceedings. Consequently we will only say that the site was occupied by an agricultural people during the earliest phase of the Iron Age ; and that the remains

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found have helped to explain a number of other already known sites. As President of the Society and initiator of this, its first excavations, the present writer followed them with the closest interest. Not the least valuable part was the experience of excavation gained by the volunteer members who took part. It is intended to excavate the site completely, and the excavations will be resumed next March. A programme of operations has already been drawn up, embodying the results of last season's experience. The whole cost of the work was borne by voluntary contributions from members of the Society and others, and the money thus raised was all spent. (The accounts will be circulated to subscribers on the conclusion of the excavations next year). Meanwhile, since the Prehistoric Society has no reserve fund for this purpose, several hundred pounds will have to be raised before March. The present writer appeals to all who read this to support a live undertaking and send a contribution to Mr E. M. M. Alexander, Hon. Treasurer of the Prehistoric Society, c/o British and Medieval Antiquities, British Museum, London, W.C.

ANTIQUITY for the Year 1939 (Volume 13)

As usual at this time we remind our Subscribers of the completion of a volume, and the related subject of subscriptions, without which this Journal cannot exist. We therefore ask them to give attention to the notice and envelope inserted in the present number. An early response will save Subscribers and Editors trouble—the former from receiving later reminders and the latter a certain measure of anxiety.

The form is omitted from copies sent to subscribers who pay through their banks or who have paid in advance for 1939.

The Parthian Structures at Takht-i-Sulayman

by DONALD N. WILBER

A RECENT survey of the fortified site of Takht-i-Sulayman situated some distance south of Tabriz and near the northwest corner of Iran has brought to light architectural remains of the Parthian, Sasanian and Islamic periods.¹ A plan of the entire area is given in FIG. 2. Among the numerous ruined structures are two buildings of the Parthian period;² the larger of them has already received brief mention by earlier visitors to the site.³ These two buildings

¹ Takht-i-Sulayman was visited in October 1937 by the eighth Architectural Survey expedition of the American Institute for Iranian Art and Archaeology. The ruins were photographed by Arthur Upham Pope, the Director of the Institute, and Stephen Nyman, and surveyed and recorded by Donald Wilber, John McCool, Dr J. Christy Wilson and Clair Armstrong. A first account of the results was given in the *London Times* of 18 February 1938 and additional photographs were published in the *Illustrated London News* of 26 February 1938: both articles were by Arthur Pope. The history of the place, called Shiz by the Arabs and Phraaspa in Parthian times, is discussed by Mary Crane: 'II, The Historical Documents' in the *Bulletin of the American Institute for Iranian Art and Archaeology*, December 1937. In this same publication a general description of the architectural remains is given; Donald Wilber, 'III, Description of the Extant Structures'. In the preparation of the present article the author received valuable suggestions from Professor E. Baldwin Smith of Princeton University.

² The buildings are shown in FIG. 2 as A and B.

³ Sir Robert Ker Porter in *Travels in Georgia, Persia, Armenia, Ancient Babylonia, &c.* (London, 1821-22), II, p. 560 says 'to the southwest, a large square building of hewn stone, with a wide columned portal of a hard red kind of marble. Part of the shafts and torus of the columns were still there, with some fragments of a curious fretwork carved on the same sort of stone'. Henry Rawlinson in 'Notes on a Journey from Tabriz, through Persian Kurdistan, to the ruins of Takhti-Soleiman, and from thence by Zenjan and Tarom, to Gilan, in October and November, 1838, with a memoir of the site of the Atropatenian Ecbatana', *Journal of the Royal Geographical Society*, x (1841), p. 52 reports 'a small square enclosure of four walls rudely built of unhewn stone, near the south-western face of the fortifications; part of the left hand column of the gateway is still standing, formed of huge blocks of a dark-red stone, which are cut into the shape of the outer half of an octagon, and are also carved with an ornamental pattern; two fragments of a shaft are standing erect in front of the gateway; two others are lying on the ground near it; and within the walls there are also two bases or capitals; for it is not easy to distinguish which; all formed of the same dark-red stone, that is not to be met with in any other part of the ruins'. A. Houtum-Schindler in his 'Reisen im Nordwestlichen Persien 1880-82', *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 1883, xviii, p. 328 describes the structure: 'Somewhat further west lay the ruins of a hall directed from north to south. The square stones of the gate were soft red sandstone . . . and on two round columns, which measured 0.80 m. in diameter, I saw traces of arabesques'.

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can now be described in detail and an attempt be made to establish their place in the history of architectural development.

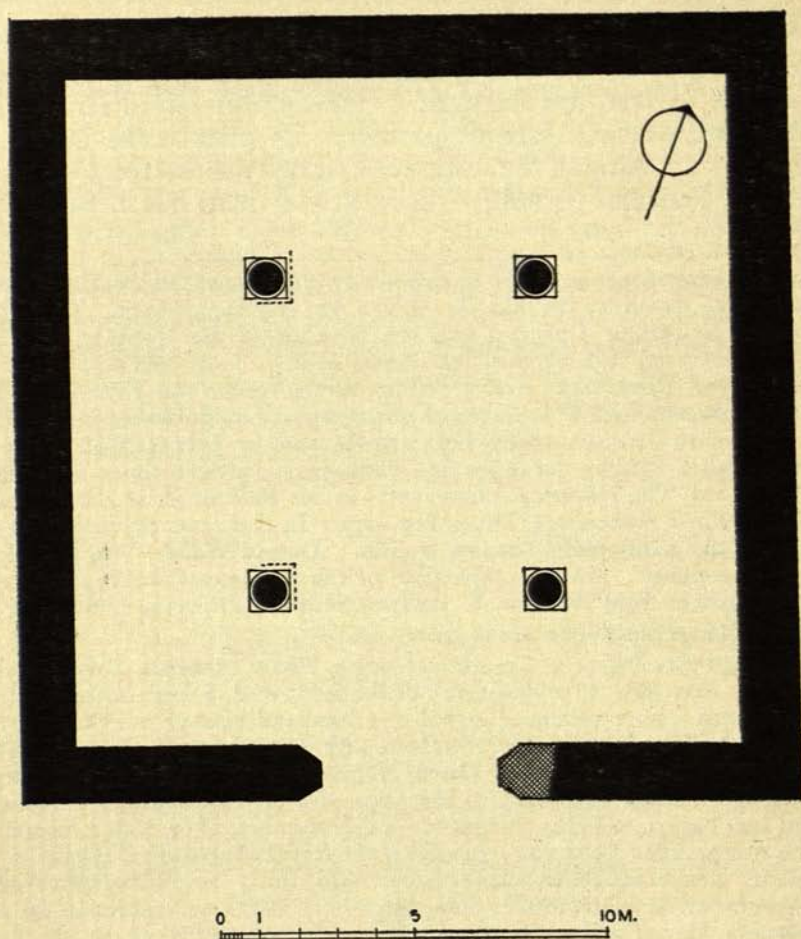


FIG. 1. PLAN OF PARTHIAN STRUCTURE A, TAKHT-I-SULAYMAN

STRUCTURE A

PLAN. The larger structure faces south-southeast, is square in plan and with a single entrance. Its plan is given in FIG. 1 and a general view of the structure from the south in FIG. 11. The dimensions of the building are fairly uniform; three interior sides are 17.35 m. in

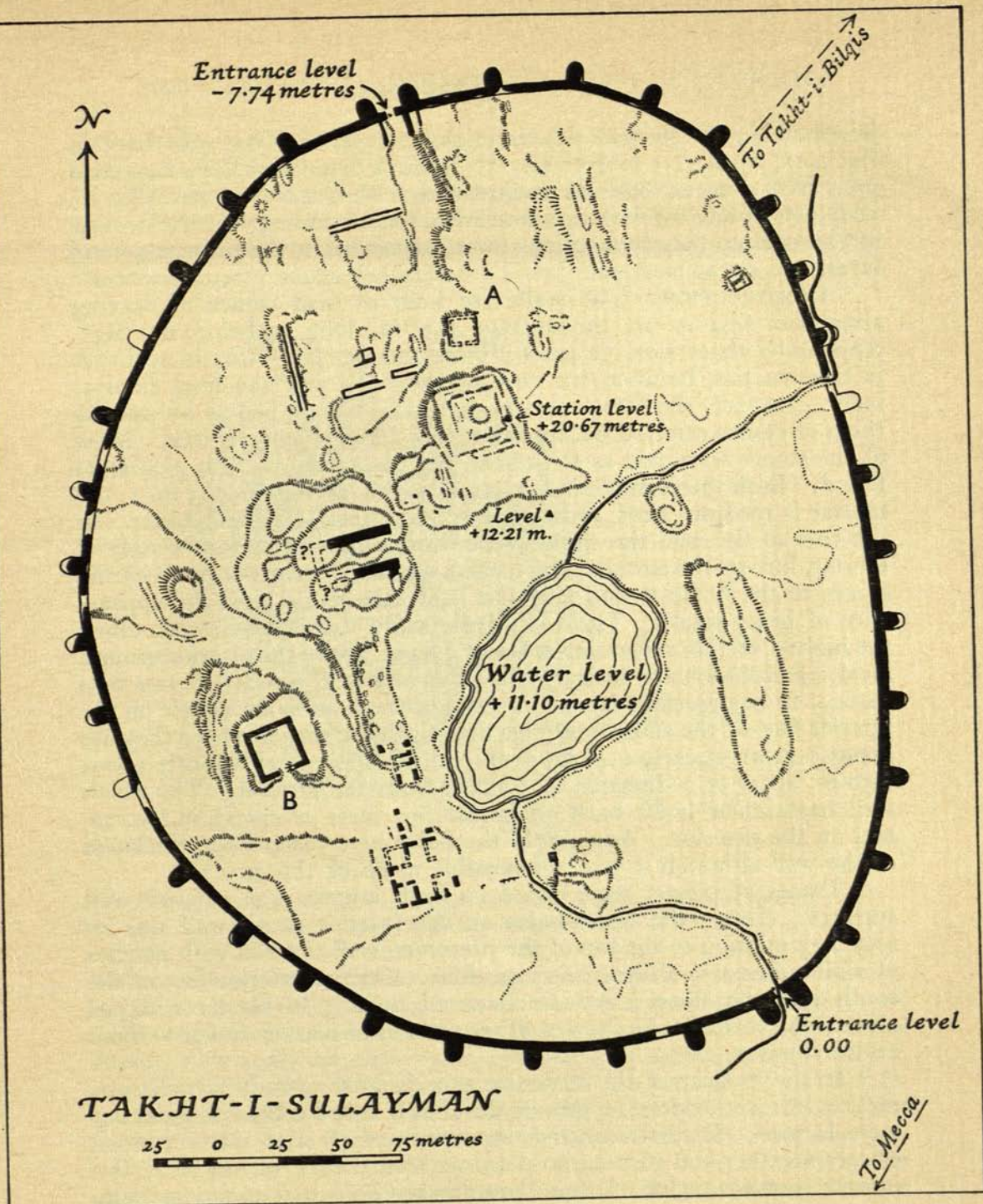


FIG. 2. SURVEY PLAN OF THE FORTIFIED ENCLOSURE OF TAKHT-I-SULAYMAN

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length while the fourth side is slightly shorter. The walls vary in thickness from 1.35 to 1.50 m. Only the left jamb of the entrance is preserved, but its position indicates that the doorway was 4.60 m. wide. Column bases were found within the building and the corners of two column base foundations were located below the present ground level.

CONSTRUCTION. The walls are built of field stones of varying sizes and shapes, on the average 0.35 m. long and 0.20 m. high. Apparently there were no carefully dressed surfaces—that is no break in construction between the core of the walls and the final exterior faces. Instead, the faces were brought to uniform planes by making them of stones selected because they had a single smooth face. Most of the stones were laid as stretchers, but occasional upright pieces are found. Both horizontal and vertical joints average 0.035 m.; the mortar is medium hard, rather coarse and almost white in colour. In the core of the wall the stones were drowned in a generous supply of mortar, but on the surfaces the mortar was not forced out between the stones to the finished wall face and hence the joints have the appearance of being raked. The walls have sadly deteriorated with time; the highest section remaining is about 5.80 m. above the interior ground level. Small sinkings in the walls originally held wooden beams in a manner to be described later. A series of these holes are visible on the interior face of the south wall near the southeast corner where they are about 0.25 m. square, 0.40 m. deep and are spaced consistently about 1.50 m. apart at a distance of 3.25 m. from the ground. The north wall has similar holes both on its interior face, as shown in FIG. 12, and on the exterior. Apparently the holes here pierced the thickness of the wall although it was not possible to check this point.

Traces of plaster were noted on both interior and exterior wall surfaces. Above the beam-holes on the interior south wall was an area 2.25 m. high to the top of the preserved wall covered with patches of white plaster in a layer 0.015 m. thick. On the exterior face of the south wall the stone joints are buttered flush with plaster and just around the corner on the east wall are patches of plaster similar to those on the interior.

In the interior of the structure at a distance of only a few centimetres below the present ground level two column base foundations were located. In their construction stones of all sizes were crowded closely together and thrust into place without the use of mortar. The interior corner angles of these presumably square foundations were

PARTHIAN STRUCTURES, TAKHT-I-SULAYMAN

accurately planned: they are at distances varying from 5.70 m. to 5.81 m. from the interior walls of the structure.

DETAILS. A number of architectural elements executed in a fine grained sandstone were found. The source of this material may have been near the site, for according to the inhabitants of the nearby village there is a quarry where sandstone is found only four kilometres to the

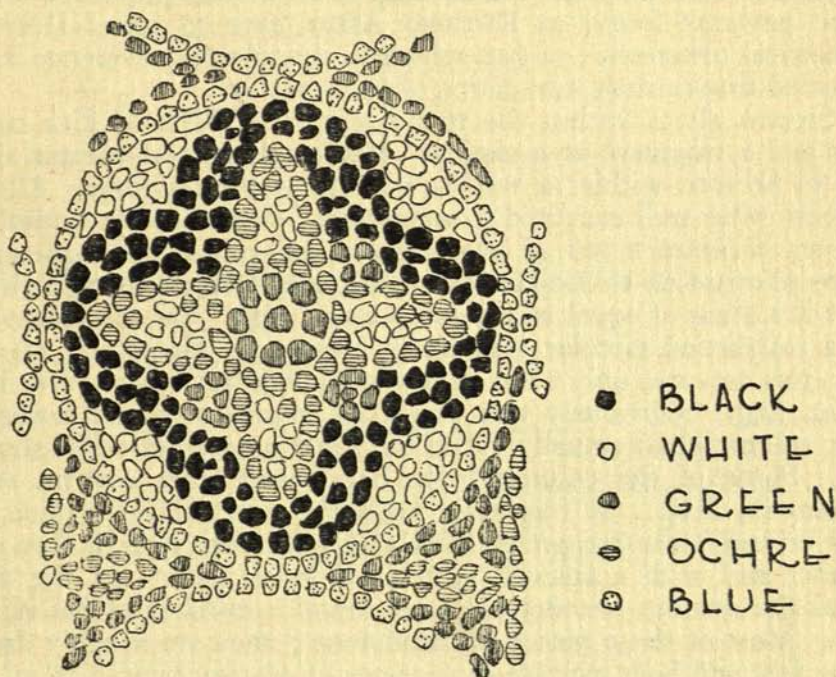


FIG. 3. CONTIGUOUS QUATREFOIL PATTERN FROM A MOSAIC FOUND AT POMPEII
after W. A. Briggs, 'Pompeian Decoration'

south. Six sandstone blocks of the west jamb of the entrance remained in position; all except the bottom one are decorated on a single one of their vertical faces with a carefully cut geometrical design. The design, now sadly weather worn, consists of contiguous and coupled cusped quatrefoils. Within each quatrefoil is a central disk with four radiating petal-like arms. The design is shown in FIGS. 13 and 14. This pattern is the most distinctive single feature of the structure and one which, if properly interpreted, should materially assist in dating the building. The motif is fairly common in early Byzantine stone carving

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but earlier appearances of it are quite rare although it is safe to say that the pattern is of Hellenistic and of western origin. A simplified example occurs in the familiar vault mosaics of Santa Costanza at Rome but the authentic prototype form can be traced to Pompeii. One of the earlier mosaic floors, pre-Christian in date, has an identical design; as FIG. 3 shows.⁴ The pattern, executed in stone at Takht-i-Sulayman, bears the same relationship to its mosaic prototype that the stucco patterns found at Parthian Assur have to other Hellenistic geometrical ornament; a fact which is contributing evidence for the suggested first century A.D. dating of the structure.

Strewn about within the monument were parts of four column bases and a fragment of a capital. Broken lengths of column drums were to be seen within as well as outside of the building. All these elements were well executed in sandstone. Each base (a typical base is shown in sketch B, FIG. 4), was a single piece of material made up of a square plinth 1.02 to 1.05 m. on a side, and some 0.36 m. high with above it a torus of equal width and 0.24 m. high. On top of the torus was a roughened circular area about 0.82 m. in diameter; on some pieces this area was only a few centimetres high but on one piece it was 0.20 m. high. Obviously this projection represented the lower part of the column shaft actually cut in the same piece of stone as the base itself. Some of the column bases had dowel holes 0.05 m. square and 0.05 m. deep. A fragment, probably of a column capital, is a badly broken piece recognizable as a simple torus 1.06 to 1.10 m. in diameter and with a smooth upper and lower face.⁵ In the debris around the column foundations were found a number of flat slabs of stone. Most of these pieces are sandstone; they are roughly dressed on one face and have average dimensions of 0.65 m. long, 0.38 m. wide and 0.12 m. thick. They were too few in number to make plausible a theory that the original floor of the structure consisted of a pavement of such slabs. Along with these flat stones were thick shapeless masses of white plaster undoubtedly fallen from the ceilings of the building.

RECONSTRUCTION. The restoration of the plan of the monument presents no difficulties; even the position of the columns was accurately established by the location of their foundation bases. The entrance

⁴ This mosaic is published in W. A. Briggs, *Pompeian Decoration*, London, 1911. It is shown on the third of the unnumbered plates. The author suggests that the mosaic dates between 200 and 80 B.C.

⁵ The simple torus used as a column capital has a long history in the Near East, appearing at such different sites as Nineveh, Khorsabad, Tell Halaf and Susa.

A



B

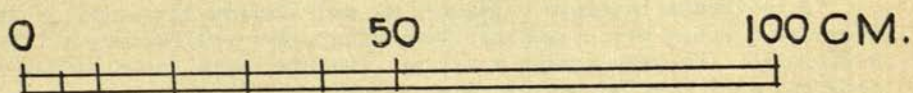
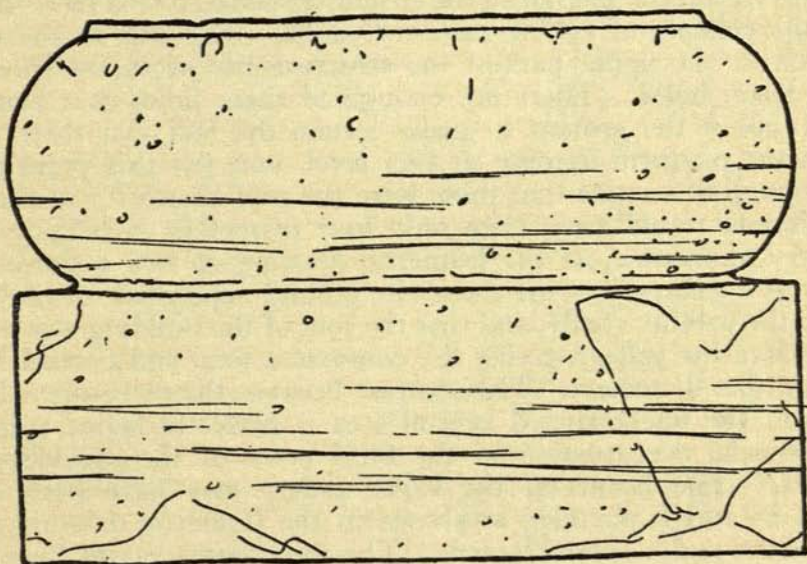


FIG. 4. SANDSTONE COLUMN BASES FROM THE PARTHIAN STRUCTURES

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doorway may have been spanned by a sandstone lintel upon which the pattern motif of the jamb was repeated and probably climaxed with a special motif directly above the middle of the door.

The superstructure of the building is less easy to visualize. The area to be covered over was a very large one and the walls seem thin and the columns small in relation to the total area, quite unlike the appearance of the plans of the smaller and better known Parthian structures where a more normal relationship between solids and voids exists. There is no reason to believe that any part of the roof was vaulted either in brick or stone: the site itself is almost unique in that no stones seem to have been taken away during more recent times, and we can reasonably assume that had cut stone vaults been employed some of the specially shaped elements required would have been noticed in the debris. There are no bricks in the ruins and no piles of stones within the interior of the structure such as would have resulted from the collapse of rubble masonry vaults. The clue to the reconstruction of the upper part of the structure lies in an interpretation of the beam holes. There are enough of these holes at a height of 3.25 m. above the ground to make certain the fact that there was a continuous platform framing at this level, and yet this point is not high enough to assume that these were the roof beams for in this case the columns would have been only four diameters in height. It is necessary to assume, as the isometric drawing of FIG. 5 shows, that there was a gallery 3.25 m. above the ground supported on tie beams set into the column shafts, and that the roof of the building was as high again above the gallery, giving the columns a total and normal height of about nine diameters. The contrast between the two-storeyed side-aisles and the unobstructed central area is perfectly logical; in this way a special accentuation of the focal point of the sanctuary was achieved.⁶ The beams of the lower gallery may have been either covered by rough planking as shown in the isometric drawing or by woven mats and a layer of earth. The roof beams would have been covered with a layer of branches and matting, and then a fairly thick fill of tamped earth so sloped as to drain water towards the edges of

⁶ A comparable treatment is found in the early Sasanian fire temple, possibly little more than a century later in date than the building under consideration, at Robat-i-Safid in Khorasan. The plan is given in FIG. 10. Here the central dome chamber is flanked north and south by a long narrow room. These rooms have a series of beam holes in their walls which show that they were originally divided into three storeys. Slanting lines of beam holes indicate the original position of the wooden stairs.

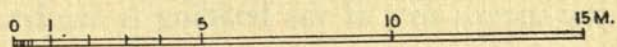
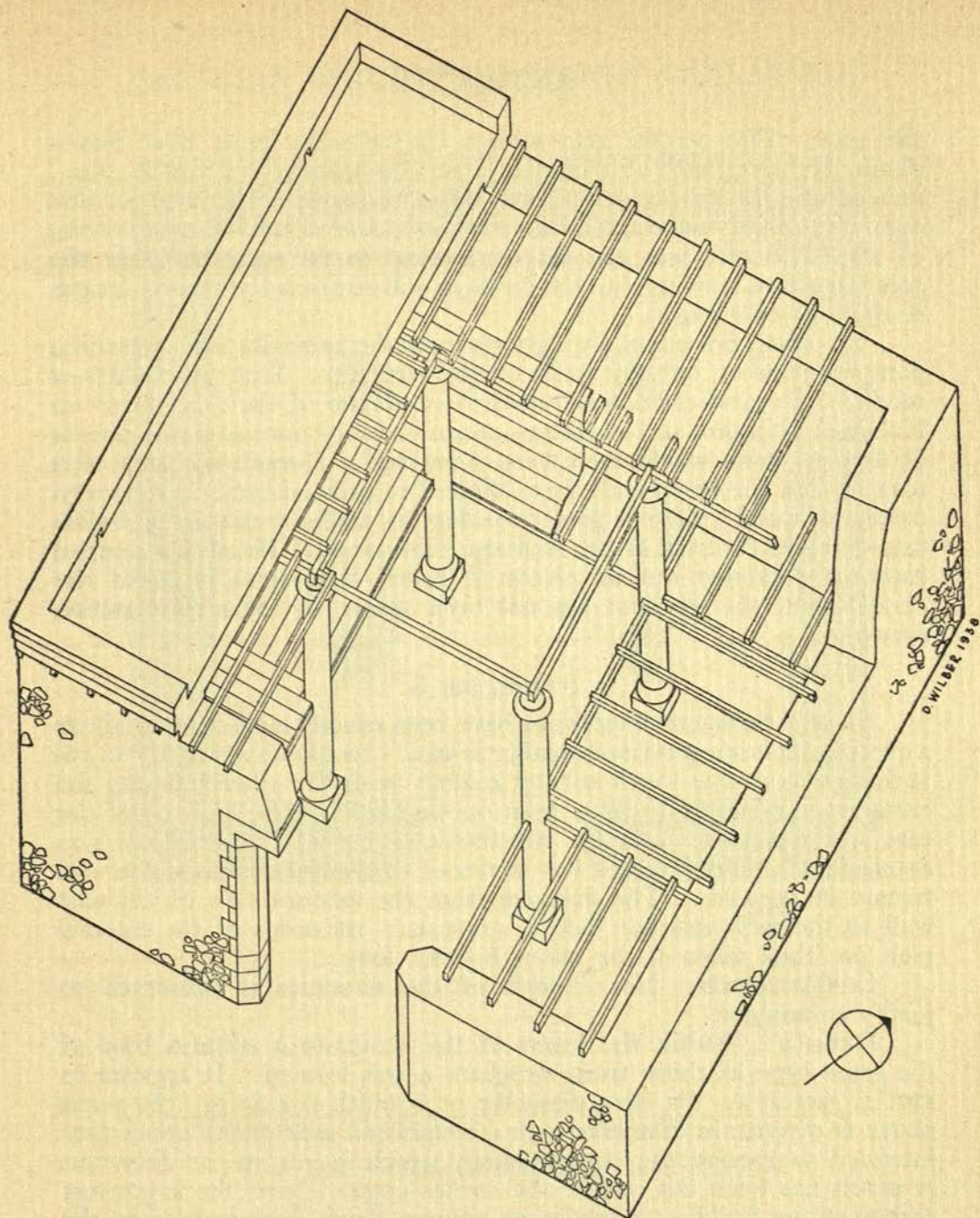


FIG. 5. RECONSTRUCTION DRAWING OF STRUCTURE A, TAKHT-I-SULAYMAN

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the roof. The central area within the columns must have had a distinctive treatment and emphasis in elevation as well as in plan; instead of a flat roof over that area we must assume either a hypaethral opening (a light well open to the sky), or a conical or domical covering of wood. Such ideas are too conjectural to be represented in the reconstruction drawing, but the problem will be discussed at some length in the following pages.

Historical precedent strongly suggests the necessity for a crowning parapet member on the walls of the structure. One possibility—a modified classical cornice executed in stone and of the type found on Nabataean temples and at Hatra—seems unlikely since some fragments of dressed stone would have been preserved. A more plausible idea may be that the beam-ends were allowed to protrude and to support a cornice of wood; there is good precedent for such a treatment in buildings going as far back as the Achaemenian period. Possibly a stepped battlement carried out in pieces of baked terra-cotta crowned the parapet, but this element has not been shown in the reconstruction drawing.

STRUCTURE B

PLAN. Structure B seems to have been exactly similar to structure A except that it is a good deal smaller in size. Its plan is given in FIG. 10. It faces almost due south and by analogy with the other building the entrance is assumed to have been on that side. The location of the east and west walls and the northwest corner of the structure was determined although only a few stones of the lowest course of the wall remain in position. The distance from the exterior face of the east wall to the west exterior face is 11.72 m.; the sides of the interior plan are thus taken to be about 8.50 m. long.

CONSTRUCTION. Not enough of the structure is preserved to justify comments.

DETAILS. Within the limits of the structure a column base of the same type as those from structure A was located. It appears in FIG. 4, sketch A. Its base diameter or breadth is 0.83 m., the torus above is 0.79 m. in diameter with a roughened area on its upper face intended to receive the column-shaft, which is 0.61 m. in diameter. A notch has been cut out of one corner angle. Near the southwest corner of the building a sandstone column drum is embedded in the ground; 0.40 m. of it protrudes above ground and its diameter is 0.52 m. A few metres east of the building is another buried drum

PARTHIAN STRUCTURES, TAKHT-I-SULAYMAN

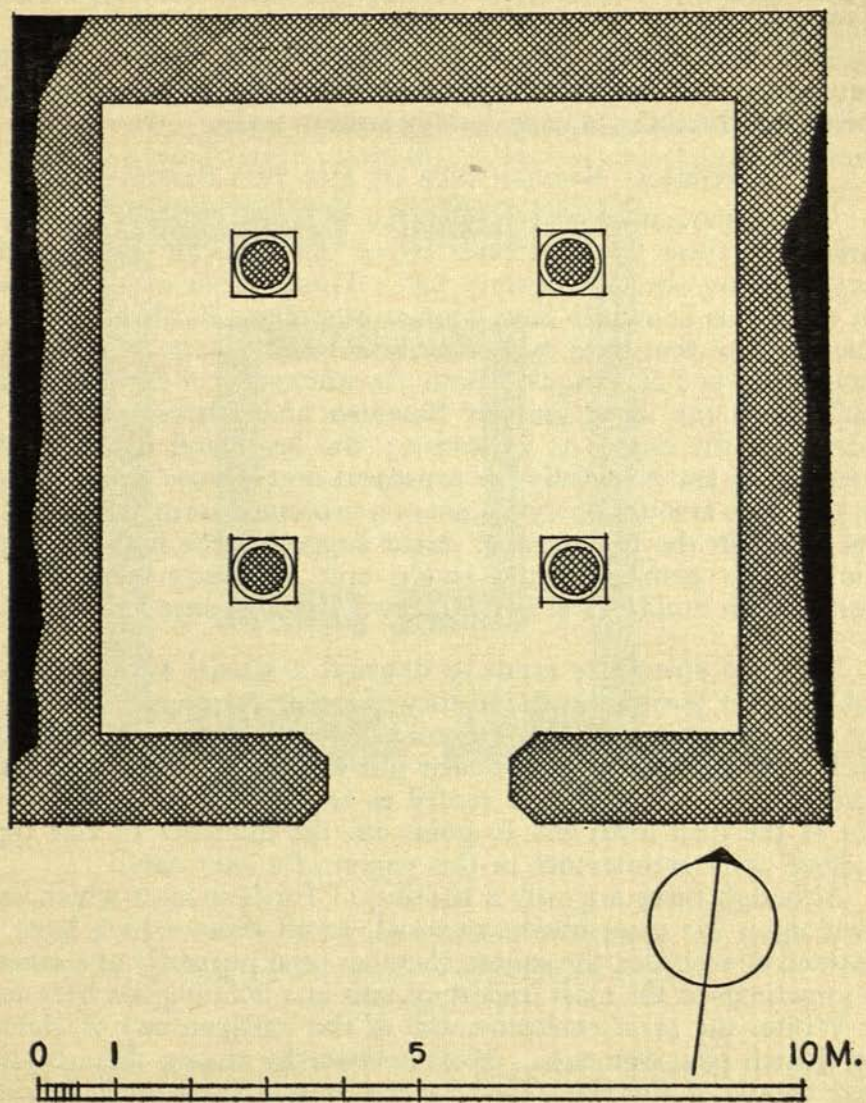


FIG. 6. PLAN OF PARTHIAN STRUCTURE B, TAKHT-I-SULAYMAN

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0.56 m. in diameter, of which 0.72 m. protrudes above ground level. Further away are additional drums of about this same size.

RECONSTRUCTION. While the data for a reconstruction of the building is most inadequate it is certain that it followed exactly the type of structure A on a considerably smaller scale.

HISTORICAL SIGNIFICANCE OF THE TWO STRUCTURES

The combination of various types of evidence has led to the conclusion that these two structures are of the Parthian period, probably erected during the first century A.D. There is, for example, the fact that the site is known to have been an important Parthian city (named Phraaspa) and that these two structures are distinctly different in plan arrangement and construction from the other ruins at the site, which are clearly from the more familiar Sasanian and Islamic periods. The evidence of the details is indicative; the bases and capital with the flattened tori and especially the ornament on the door jamb. The fact that the same amount of stylization of a prototype form is reflected here as is found in the ornament at Assur suggested the first century A.D. dating. The plan type, the single unit sanctuary form, has close affinities with buildings at better known Parthian sites.

The two structures seem to demand a special study which will establish their position in the history of architecture. It will be necessary to compare them with sanctuaries from other Parthian sites, to look for the origin of this particular plan form, to consider the manner in which the structures were roofed as an aid in tracing the development of the plan form and to point out the influence of this type of structure upon architecture in this region of a later date.

Although there are only a handful of Parthian sites which can be drawn upon for comparative material, in all those which have been excavated or recorded the square chamber used primarily as a sanctuary but sometimes as the most important unit in a building has been found.

Within the great enclosure wall of the Parthian city of Hatra are several such plan elements. Most noteworthy among them is the so-called temple of the Sun-God⁷ located behind the principal building of the palace and reached by a door placed off centre in the rear of the great south liwan of the palace. The plan, illustrated in FIG. 7,

⁷ Walter Andrae, *Hatra nach Aufnahmen von mitgliedern der Assur-expedition der Deutschen Orient-Gesellschaft*, I, Leipzig, 1908, pls. II and X and vol. II, Leipzig, 1912, fig. 221, pls. VII, IX, XI.

PARTHIAN STRUCTURES, TAKHT-I-SULAYMAN

consists of a square within a square. The walls are of stone rubble faced with regular courses of cut stone blocks. The inner square of the plan is 11.80 to 11.95 m. along the sides ; it was roofed with a tunnel vault, also of cut stone, running east-west. The walls of the room are over two metres thick and the springing line of the vault is some eleven metres from the ground. The corridor around the inner

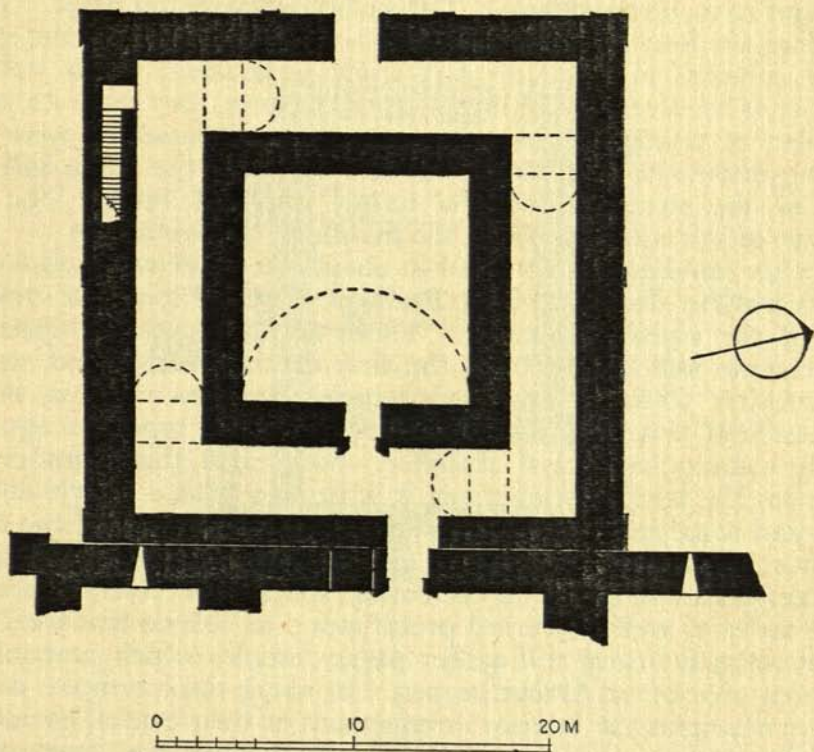


FIG. 7. PLAN OF THE SANCTUARY OF THE SUN-GOD AT HATRA
after Walter Andrae, 'Hatra'

chamber is also tunnel vaulted. The important location of this unit and its extremely good construction make it a characteristic example of the use of this plan form at Hatra ; there are, however, at least nine comparable plans at the site in some of which a slightly rectangular central chamber is found. The other examples occur as grave-monuments, as free standing buildings and at the rear of liwans ; in all cases they are covered by tunnel vaults.

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Excavations in the Parthian level of the city of Assur have brought to light several examples of this same plan. Some are relatively isolated units, but the most important example for comparative purposes comes from near the northeast corner of the palace where it is associated with the earliest Parthian construction. The room, the plan of which is given in FIG. 8, is not a square; it is 14 m. on two interior sides and 12 m. on the others. The walls are two metres thick. Within the room are four large piers the position of which recalls the placing of the columns in structure A at Takht-i-Sulayman. The walls and piers are of brick and, according to the excavators, they carried a vaulted roof also of brick.⁸ Above the pier arches themselves were walls running east-west. Between these two walls and the north and south walls of the structure ran the tunnel vaults of brick. The main entrance to the chamber was at the middle of the south side.

Other buildings constructed at about the same period in a region considerably to the west of the Parthian domain supply the archetype form of the square sanctuary. These are Nabataean temples built of cut stone and dating from the first century before and the first century after Christ. Two such temples are illustrated in FIG. 9.⁹ The essential unit of the smaller temples of this type is a square or slightly rectangular central chamber. Sometimes this chamber alone comprises the temple, sometimes it is fronted with a distyle entrance porch and sometimes there is a passage-way on all sides of the central chamber. This standard plan is used so frequently in this area, and the examples are so similar to each other, that it is necessary to postulate a long series of well developed prototypes; to believe that the Nabataean temples followed still earlier pagan temples which probably had first been erected in Arabia proper. In using these temples as comparative examples the interior arrangement of their central chambers is especially to be noted: apparently most of them had four columns placed to form a square in the same manner as in structure A at Takht-i-Sulayman.¹⁰ The method by which these temples were roofed has not been treated very fully by their recorders but the suggestion was

⁸ Walter Andrae und Heinz Lenzen, *Die Partherstadt Assur*, Leipzig 1933, fig. 20.

⁹ Plans of a number of these temples are given in H. C. Butler, 'Nabataean Temple Plans and the Plans of Syrian Churches', in *Studien zur Kunst des Ostens*, Vienna, 1925, pp. 9-16.

¹⁰ In most cases the columns were not actually found *in situ* but lying in the nearby vicinity; see H. C. Butler, *Princeton Expedition to Syria*, division II, Ancient Architecture, section A, p. 374.

PARTHIAN STRUCTURES, TAKHT-I-SULAYMAN

made that the space included within the four columns was crowned with a hypaethral opening.¹¹

Butler has demonstrated the influence of these Nabataean temple-plans upon both the Roman temples of but slightly later date, and upon the Christian churches of Syria. It is now possible to call attention

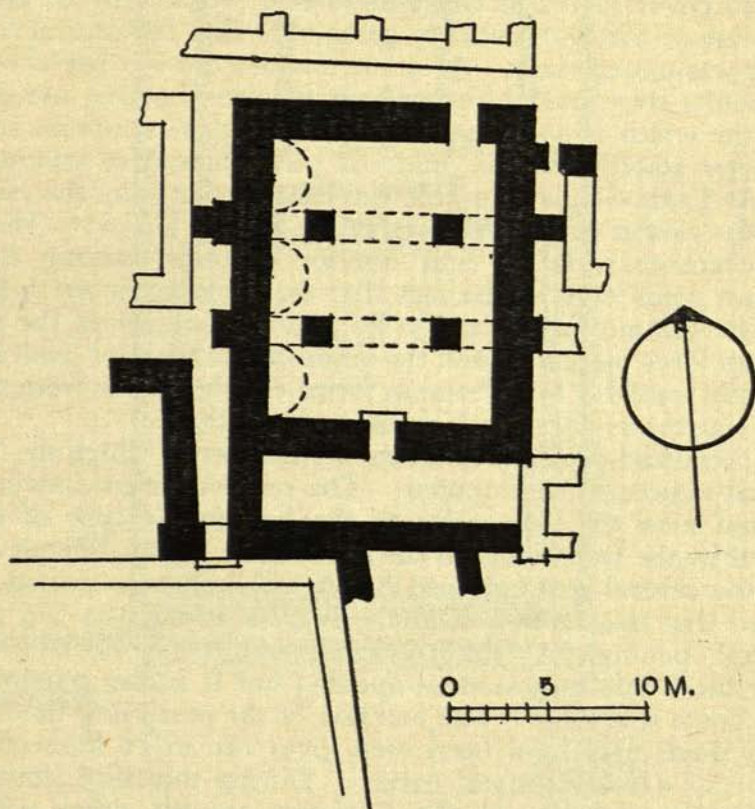


FIG. 8. PLAN OF THE EARLY PARTHIAN SANCTUARY AT ASSUR
after Walter Andrae and Heinz Lenzen, 'Die Partherstadt Assur'

to the influence of this plan type, the square sanctuary frequently with interior columns, upon Parthian architecture and especially upon the structures at Takht-i-Sulayman. The fact that Parthian architecture was highly eclectic in nature need only be mentioned here. It would be easy to show that the constructional features and ornamental details

¹¹ See Butler, *Studien zur Kunst des Osten*, p. 11.

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of buildings at the various Parthian sites copy quite closely the earlier regional forms. The Nabataean sanctuary plan was one of the borrowed forms which was somewhat altered in order to conform to the building materials and methods in vogue at each Parthian site. At Hatra construction in cut stone was highly developed; tunnel vaults large enough to cover spaces of any desired size could easily be erected so that the use of the four auxiliary columns within the central sanctuary chamber was unnecessary. At Assur the material was baked brick and tunnel vaults were used to cover the chamber, but the use of bricks limited the width of spans and made intermediate supports advisable. For greater stability in this material piers instead of columns were used. At Takht-i-Sulayman, the site most distant from the Nabataean region, the closest copy of the archetype form is found.¹² Here is the square chamber with the four interior columns varying from the Nabataean plans only in the fact that the building is much larger in size. The column bases seem to be provincial copies of the flattened Nabataean torus moulding, and the ornament on the door jamb although not directly traceable to Nabataean forms clearly derives from the same western sources as does the Nabataean decoration.

A specialized problem concerns the manner in which the Takht-i-Sulayman structures were roofed. The reconstruction drawing shows a flat roof over the side aisles of the building, a type of covering suggested by the beam holes in the lower walls. The difficult question is how the central area enclosed by the columns was treated. Butler suggested that this same area in the Nabataean temples had merely a hypaethral opening. At Takht-i-Sulayman direct evidence is lacking; possibly there was a hypaethral opening but it is also possible that a wooden dome was used. The mention of the possibility that a central dome of wood may have been used gives rise to an interesting consideration of a more general nature. During the third, fourth, fifth and following centuries of the Christian era the dome achieved a position of great importance in architecture, in Syrian and Byzantine churches, Roman monuments and Sasanian temples. The reason for this rather sudden and universal popularity of the dome has never been satisfactorily explained. It is, however, a fact that in the earlier

¹² There is another Parthian structure whose plan is almost as close to the Nabataean form but a drawing of it has not yet been published. The structure is a mausoleum the principal chamber of which is square in plan and with four cruciform piers forming an interior square. It was discovered by Soviet excavators at Nesa near 'Ashqabad and is referred to in an editorial note in *A Survey of Persian Art* (forthcoming), I, p. 444.

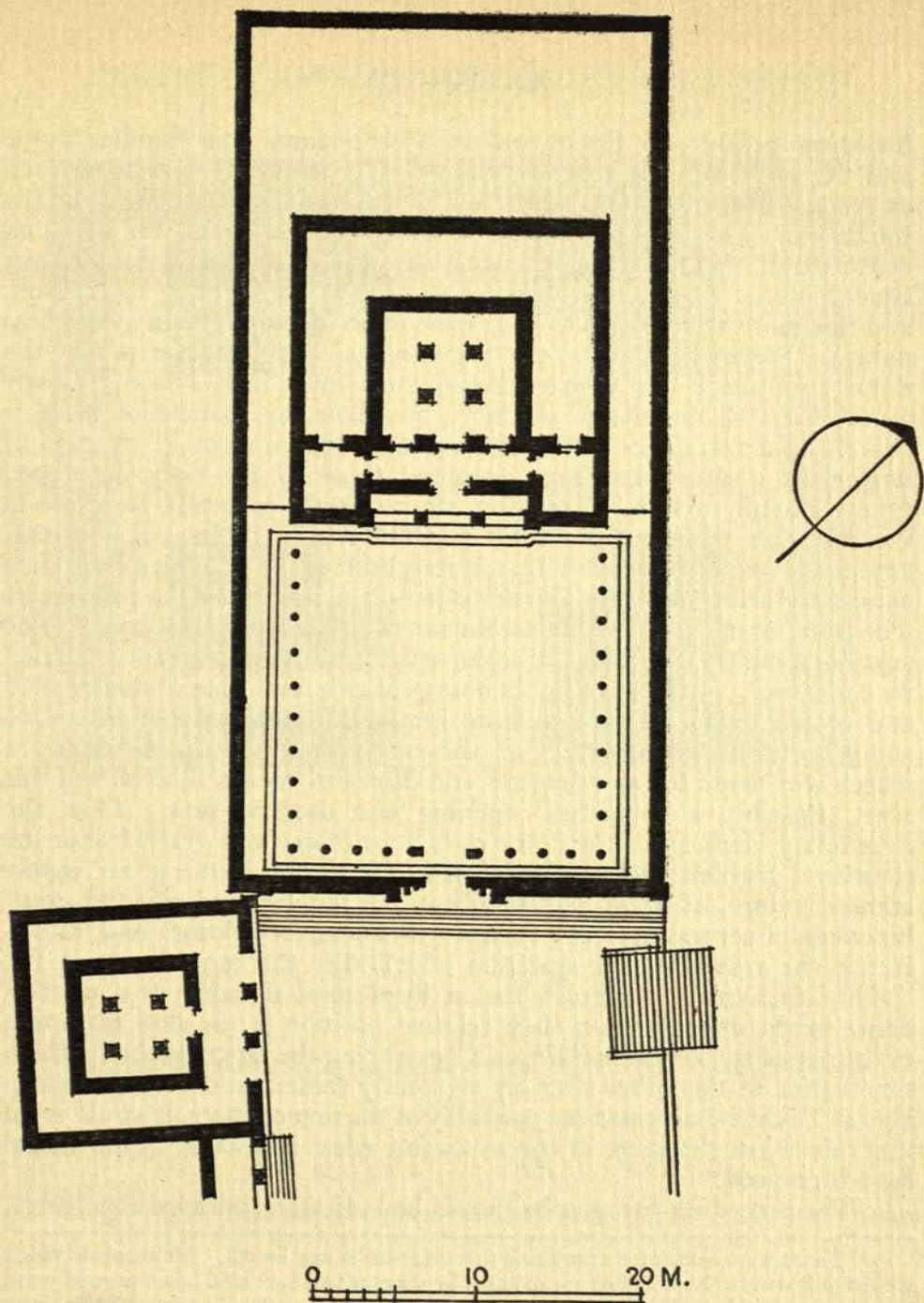


FIG. 9. PLANS OF THE NABATAEAN TEMPLES OF BA'AL SHAMIN AND OF DUSHARA AT SI' (SEEIA)
after H. C. Butler, 'Ancient Architecture in Syria'

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historical periods, in Egypt and in Mesopotamia, the familiar dome and the vault were consistently employed for utilitarian purposes such as storage rooms or were restricted to the less important parts of the buildings. The abrupt change which takes place in the opening centuries of the Christian era with the use of imposing domes over square rooms of sanctuary nature must have had strong motivation, and this motivation seems to have been of an ideological and symbolical nature. Somewhere about the beginning of the Christian period the dome as a shape and constructional form must have become closely associated with the idea of sanctity; just how this association arose is still to be determined. It is obvious that experiments in the use of large-scale domes must have preceded those of the fully developed type that still survive. Tentative efforts would naturally be made in the materials which were easiest to work with and there is a certain amount of evidence to show that domes built of wooden members were common during the early Christian period.¹³ Actually the process by which the dome acquired its ascendant position can be outlined. The square sanctuary undoubtedly began as an entirely open area surrounded by a low wall. In time actual buildings of this same shape were erected and roofed over. With a definite increase in the scale of the plans along with the accentuation of the central part of the sanctuary a search was made for an adequate and dignified means of covering this area. Possibly a hypaethral opening was used at first. Then the developing ideology of the dome over a sanctuary was grafted onto the structural problem and resulted first in the use of domes of an impermanent nature, of wood, and finally in the familiar and effective combinations of central masonry domes with subsidiary domes and vaults. Hence the answer to the question of whether the central area in the Takht-i-Sulayman structures had a hypaethral opening or a wooden dome might depend upon their relative position in the slow evolution of the masonry domed building. Considering the fact that the Parthian sanctuaries at the other sites are so solidly roofed, and that the buildings at Takht-i-Sulayman are probably of the first century, it would seem that this is just the stage in the evolution when a wooden dome would have been used.

The preceding paragraphs should be indicative, perhaps conclusive,

¹³ There is no reason for examining this evidence at any length. Monuments which are either known to have had or are thought by some scholars to have had domes of wood include the church at Kal'at Sim'an, the cathedral at Bosra, the church of Constantine at Antioch and the Dome of the Rock at Jerusalem.

PARTHIAN STRUCTURES, TAKHT-I-SULAYMAN

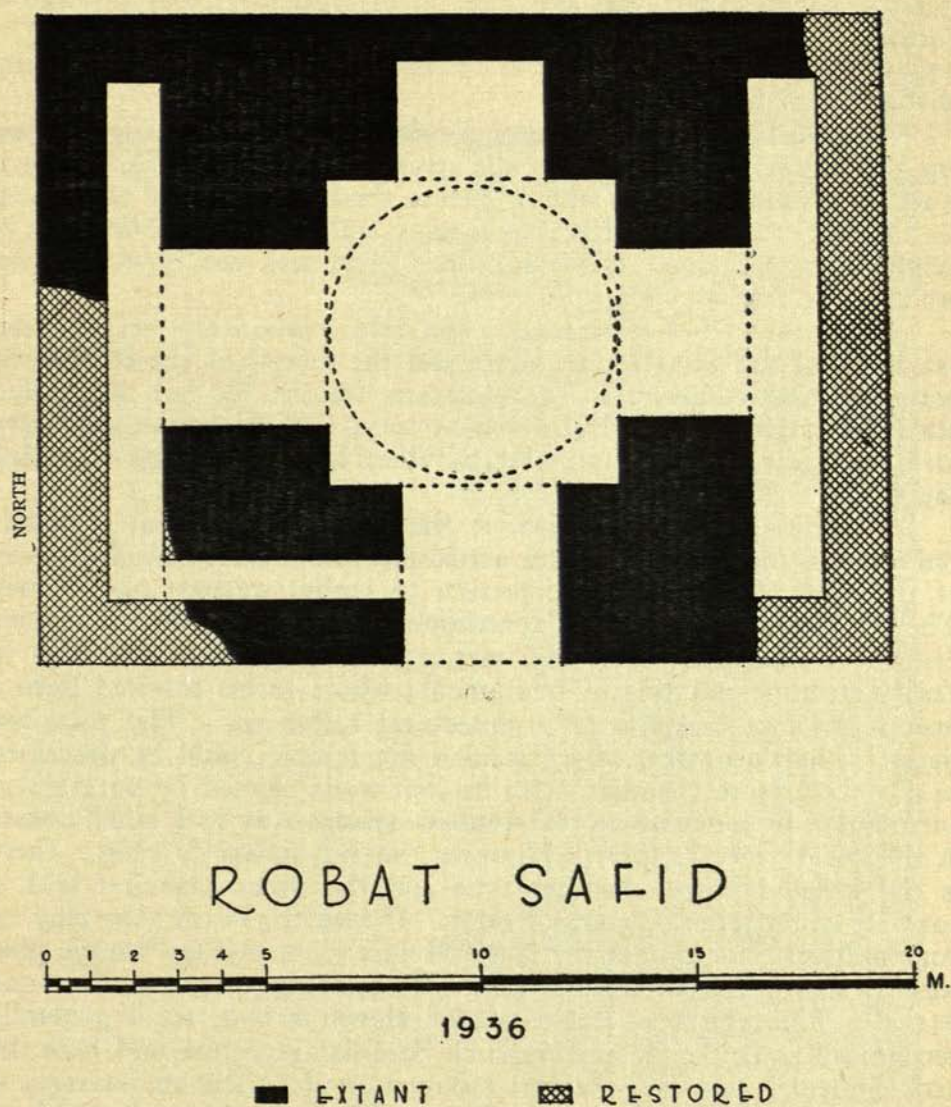


FIG. 10. PLAN OF THE EARLY SASANIAN TEMPLE NEAR THE VILLAGE OF ROBAT-I-SAFID IN KHORASAN
On the south and east sides are traces of contemporary elements of an attached or adjacent building

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evidence of the fact that the plan form, structural and decorative Parthian features at Takht-i-Sulayman reflect influences moving from the west in the direction of the east at a period coinciding with the opening of the Christian era.

An additional subject remains for consideration. Having pointed out the prototype examples for the structures at Takht-i-Sulayman it is necessary to investigate what influence these monuments, and others no longer extant, may have had upon subsequent architecture in neighbouring regions. More specifically we can see how Sasanian architecture reflects such influences.

Dr Herzfeld has pointed out the plan relationship between the sanctuary of the Sun-God at Hatra and the temple of the Hellenistic period at Kuh-i-Khwaja in south-eastern Iran.¹⁴ He has also called attention to the Arab and Nabataean prototypes of this square sanctuary form and quite recently Monneret de Villard has restated and expanded this idea.¹⁵

The noteworthy thing about the new structures at Takht-i-Sulayman is that they supply the actual physical links for an illustration of the debt of Sasanian architecture to earlier western plan forms. They enable a more specific connexion to be made between regions distant in time and place than was previously possible and help to clarify an understanding of monuments whose forms resulted from a fusion of cross currents of architectural influences. The facts are these. The norm plan of a Sasanian fire temple could be described as a central dome chamber, with its four walls pierced by portals and surrounded by a narrow tunnel-vaulted passage-way with small domes at the corner intersections. However, variant forms do exist: there is the isolated dome chamber type and the dome chamber with a corridor along some but not all sides. Indeed the norm plan may be comparatively late in date, for it would now seem as if the temple plan was in a state of flux and change during the opening years of the Sasanian period. The temple at Robat-i-Safid, shown in FIG. 10, is generally recognized as being the earliest such Sasanian structure and here the arrangement is unusual, perhaps rudimentary, for there are passages or rooms on only two sides of the building. The central chamber with its rubble masonry dome on squinches is true to the Sasanian norm, but

¹⁴ Ernst Herzfeld, *Archaeological History of Iran*, London, 1935, p. 88-89.

¹⁵ Ugo Monneret de Villard, 'The Fire Temples', in the *Bulletin of the American Institute for Persian Art and Archaeology*, December 1936, p. 175-184.

PLATE I

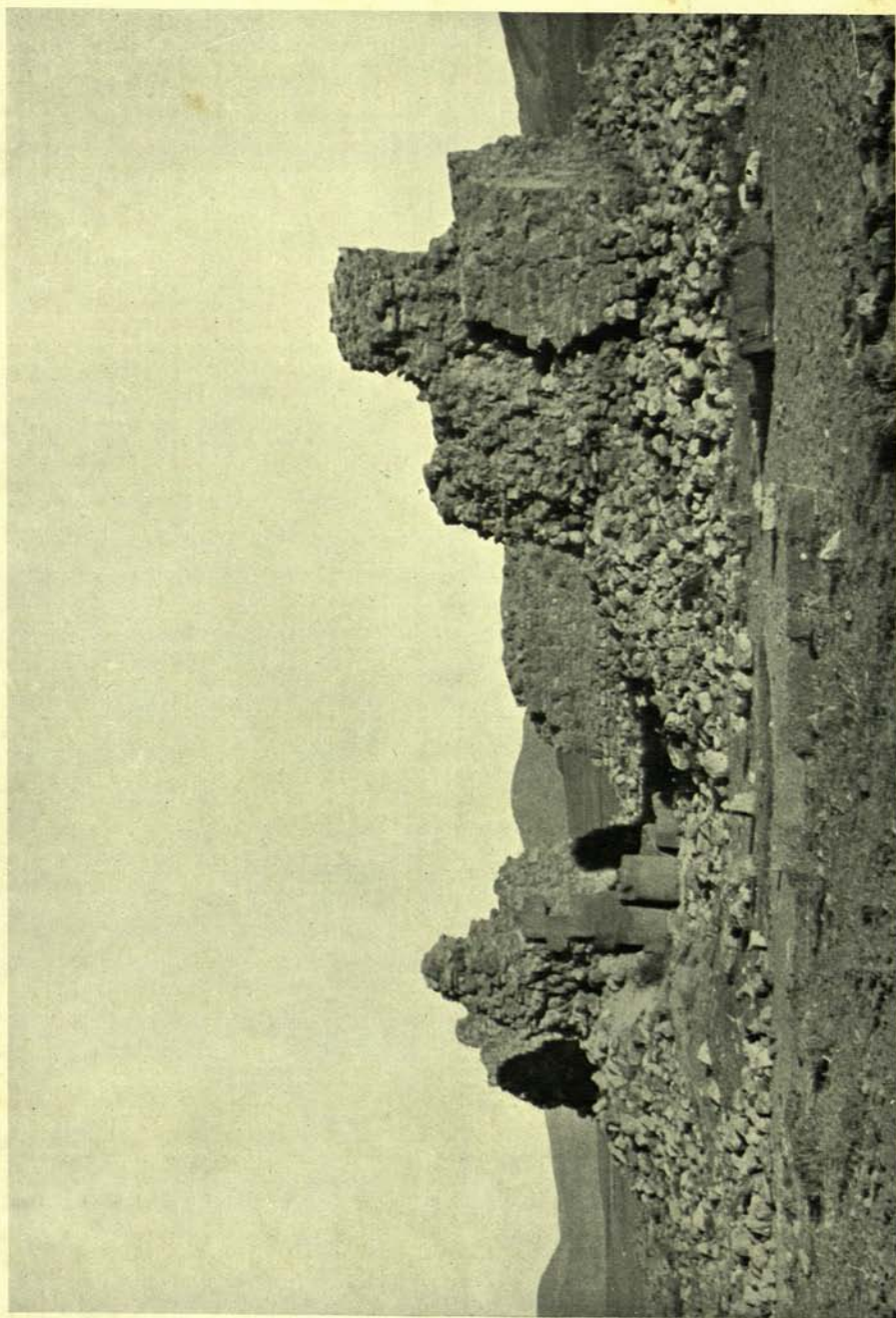


FIG. II. STRUCTURE A, SEEN FROM THE SOUTH

PLATE II

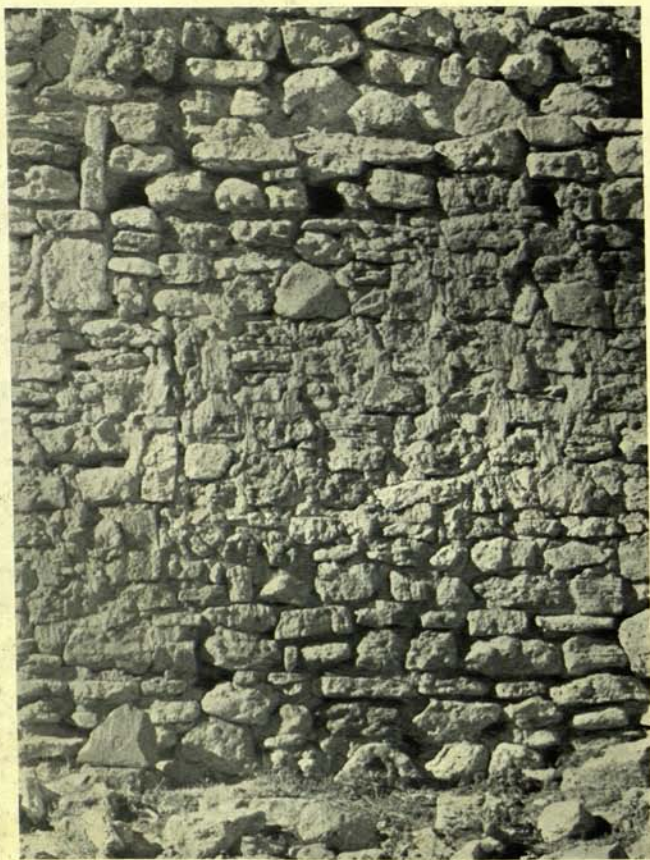


FIG. 12. BEAM HOLES IN THE INTERIOR FACE OF THE NORTH
WALL OF STRUCTURE A

ph. Arthur U. Pope



FIG. 13. THE PRESERVED LEFT JAMB OF THE ENTRANCE TO STRUCTURE A
ph. Arthur U. Pope

PLATE IV

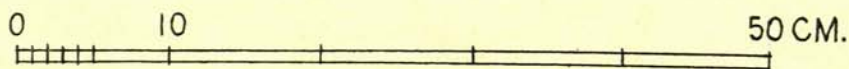
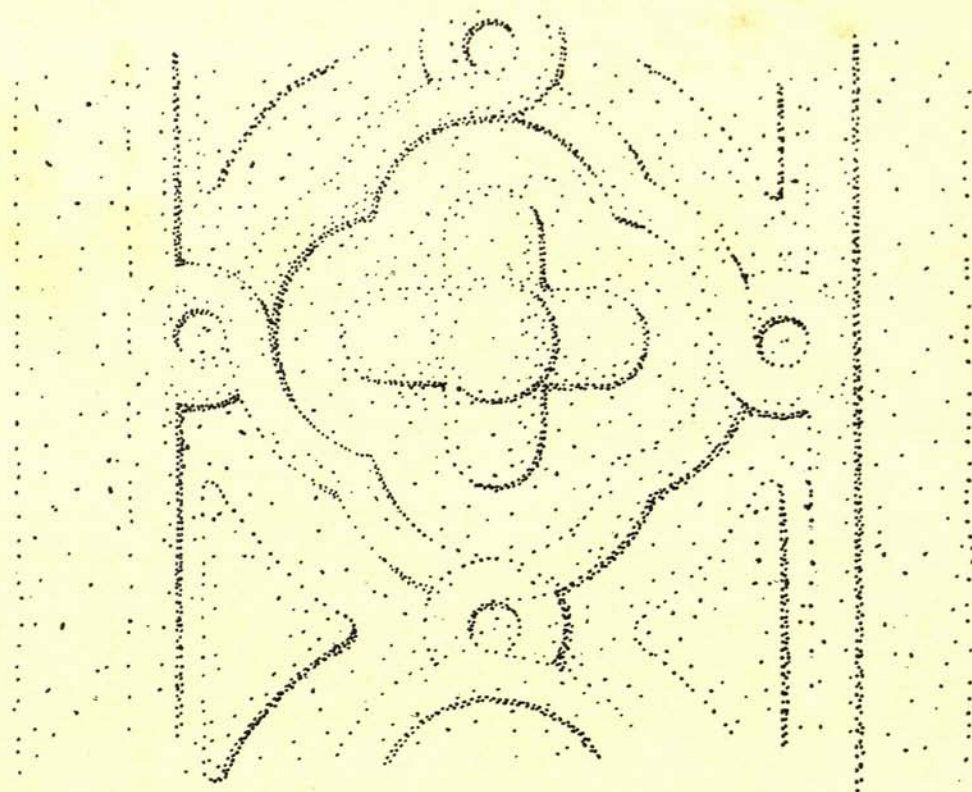


FIG. 14. DETAIL DRAWING OF THE PATTERN MOTIF ON THE LEFT ENTRANCE JAMB OF STRUCTURE A

PARTHIAN STRUCTURES, TAKHT-I-SULAYMAN

here it is clearly in the stage of structural experiment since the dimensions of the chamber are most irregular and because the squinches rest upon a series of wooden beams which bridge the corner angles of the structure. Since the dome is used in such a tentative manner over the square sanctuary the question naturally arises as to how it found its way into this architecture at all. Herzfeld and Monneret de Villard have related this type of plan to the Nabataean temples, but have not

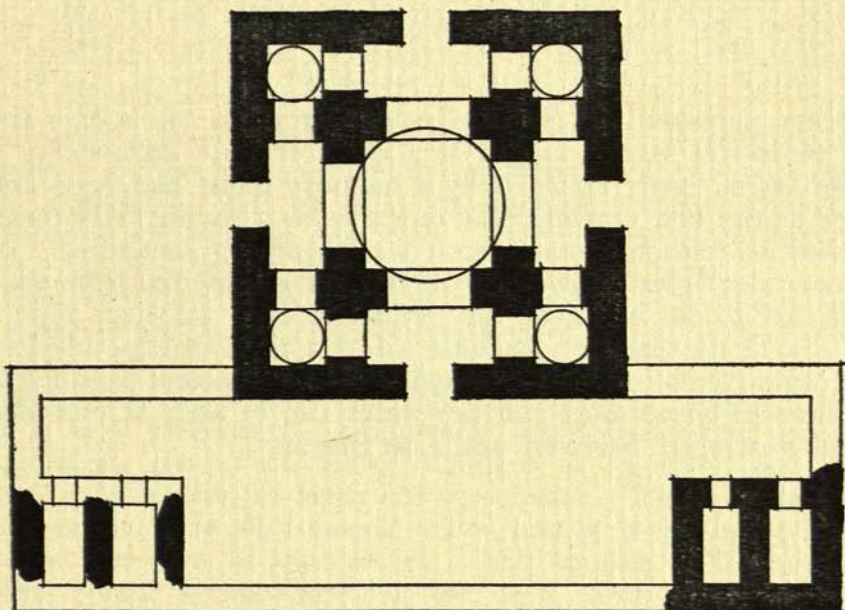


FIG. 15. PLAN OF ONE OF THE SASANIAN FIRE TEMPLES IN THE VALLEY OF GIRA,
PROVINCE OF FARS

after Ernst Herzfeld, 'Archaeological History of Iran'

tried to explain the divergence in superstructure between model and copy; that is to say why a masonry dome suddenly appears over a plan of western origin. Of course constructional changes are often profoundly influenced by local materials and methods; but in this case the problem is a more fundamental one. We are asked to explain the sudden popularity of the dome in Sasanian architecture. The sequence of development may have followed this course. From the Nabataean temples the square sanctuary chamber came to the Parthian architects, who passed it on to the early Sasanian builders. In Iran a norm plan

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was then evolved through successive trials. In the first attempts the four columns of the Nabataean and Parthian sanctuaries were replaced by a solid wall since the architecture was still in a stage of structural uncertainty. Later the walls were pierced with wider openings, and finally became light corner piers such as are found in the temple at Gira, one of which is shown in FIG. 15. The manner by which the central area was covered followed a somewhat different course. The symbolical importance of the dome in the western lands struck a responsive chord, and the idea itself was seized upon but not the western technique of construction in light materials, for in the traditions of the lands to the east of Iran another method of vaulting a square area had long been practised. It consisted of small timbers laid in over-lapping tiers across the corner angles of a chamber until an opening small enough to be easily crowned by a masonry dome had been created. These domes had remained for centuries in a rudimentary form and had had no traditional association with sanctuary structures. It was the new ideological importance of the dome imported from the west which led to its use over the Nabataean and Parthian type plan. The zeal of the Sasanian builders led to a chain of experiments with their primitive native form and finally to the competent handling of the monumental domes on squinches which can be seen at such familiar sites as Firuzabad, Sarvistan and Kasr Shirin.

Long-Houses and Dragon-Boats

by CARL WHITING BISHOP

STUDENTS no longer seriously regard the Chinese civilization as unitary in origin—as derived, in other words, from any single source. It appears rather to have developed out of the interaction, over a long period, of several antecedent cultures. Certain of its elements, past or present, are northern, even circumpolar, in distribution.¹ Others appeared first in the distant West, and only reached China (overland, not by sea) considerably later.² Others still originated in southeastern Asia itself. Among traits of the last-named class are the two forming the subject of the present paper.

Observers long ago pointed out the existence in southeastern Asia and parts of the East Indian archipelago of an integrated group of phenomena forming together what is known as a culture-complex.³ Among features characterizing this are the following. A dog-progenitor myth is very widespread. Goddesses⁴ and 'priestesses' (the latter often nothing more than female shamans or exorcists) play a conspicuous role in religious belief and observance. There are traces of a former matriarchate with female rulers, and of a custom of brother-and-sister marriage, at least among ruling families.⁵ Re-interring or 'second burial' of the bones of the dead, often in jars, is widely practised. Respect is shown to superiors by squatting, not by bowing or prostration, as in the West and among the Chinese culture-group

¹ Among these are traces of a former bear-cult; the use of pit-dwellings; the compound bow; the coracle; and the semilunar or rectangular stone knife—the 'woman's knife' of the Eskimo.

² Examples are, the use of bronze and of the war-chariot; the ox-drawn plough and the growing of wheat (for the two latter items see *ANTIQUITY*, 1936, x, 277-80); and probably the potter's wheel and the walling of towns with ramparts of *terre pisée*.

³ See Notes by Col. Sir Henry Yule in *Journ. Anthropol. Institute of Great Britain and Ireland*, 1879-80, LX, 290 ff.

⁴ A well-known example is the Japanese Sun-Goddess, regarded as the divine ancestress of the imperial line. Many other instances could be cited.

⁵ See W. J. Perry, *The Megalithic Culture of Polynesia*, Manchester Univ. Press, 1918, chap. XI, 96-104, 'Incestuous Unions'.

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proper. Articles of dress are, among the men the perineal bandage or 'loincloth', among the women a kilt or *sarong*. Other traits of this complex are head-hunting, betel-chewing, tattooing, blackening of the teeth, the manufacture of bark-cloth, and the use of dugout canoes and pile-built granaries. In war and the chase the spear takes precedence over the bow and arrow, often to the practical exclusion of the latter. Also belonging to the above culture-group is that form of dwelling—in origin a communal village perhaps with matriarchal institutions⁶—usually known as a 'long-house'.

Typically, this is a very elongated but proportionately narrow structure of wood or bamboo, raised (often considerably) above the ground on piles, and with a gable roof. Examples have been noted which had a length of as much as 1200 feet, though the average is probably not half that figure. The width is commonly from 30 to 60 feet, the distance between the partitions separating individual chambers from 20 to 30 feet. The height from the ground to the floor of the house is 12 to 15 feet, sometimes more. From end to end of one side (the front), and accessible from below only by means of ladders, extends a continuous parapet or gallery with a hand-rail and covered by the projecting edge of the roof above. On this gallery opens a row of rooms, each the abode of one family. Or, less typically, two such rows of cubicles, both standing on piles at the same height, may confront each other from opposite sides of a long planked central corridor which takes the place of the exterior gallery just mentioned. The pile-studded but otherwise open space beneath the house serves for the dumping of refuse; the sheltering of domestic animals—dogs, swine, and fowls; and the storing of community or household impedimenta, such as canoes or fishing-nets. Peoples occupying such habitations commonly employ the *jhūm* system of cultivation,⁷ which owing to the rapidity with which it exhausts the soil, necessitates the removal of villages to fresh sites every few years.

Houses of this general type exist even today over a wide area, from the southeastern borders of Tibet, through Farther India, Indo-China, and Indonesia, right down to the Solomons. Common in much of Assam, they occur likewise among the Kachins of Upper Burma.⁸

⁶ cf. Richard Thurnwald, *Economics in Primitive Societies*, Oxford, 1932, p. 26.

⁷ See Charles Hose and William McDougall, *The Pagan Tribes of Borneo*, 2 vols., London, 1912; ref. to vol. I, pp. 100 ff.

⁸ John Anderson, *Report of the Expedition to Western Yunnan viâ Bhamô*, Calcutta, 1871, p. 122.

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They seem also to have been used formerly by the Karens, among whom they are said still to survive in the Pegu hills.⁹ They are found too all over the East Indian archipelago, notably in Borneo (except among the primitive Punans); the most substantial are probably those built by the Kayans, believed to be rather recent arrivals in the island.¹⁰ That a similar form of communal pile-house once existed in parts of China and Japan appears highly probable, as we shall see.

In central and southern China, little archaeological work has yet been done. Hence for our present scanty knowledge of the pre-Chinese inhabitants of that region we must rely almost entirely on incidental notices scattered through the literary remains left us by the ancient Chinese proper (then pretty well confined to the Yellow River basin, in the north), and on a study of survivals of various kinds among the present-day populations of the above-mentioned area.

In the northern China of today the typical peasant's hut is rectangular in plan, with walls and roof of dried mud.¹¹ In the south, its walls are of split and plaited bamboo or a kind of 'wattle-and-daub', its roof of thatch. Everywhere the floor is regularly the bare earth. In late prehistoric times, on the loess-covered plains and hillsides of the northwest, habitations were excavated underground in the form of circular or elliptical pit-dwellings of 'beehive' shape, entered through an opening at the top.¹² In central and southern China—the Yangtse basin and the regions south of it—a widely different state of affairs prevailed. There, owing to the rugged and broken terrain, covered as it then was by almost impenetrable subtropical forest but traversed in all directions by watercourses, there came into existence a mode of life conditioned primarily on proximity to navigable streams. In these portions of China, pit-dwellings have not been found. On the contrary, habitations there seem to have taken the form of pile-houses, erected as a rule close to water though not actually in it. Of such structures examples exist even today, in the form of more or less modified survivals.

Thus in certain regions—as for instance along much of the middle

⁹ H. I. Marshall, 'The Karen People of Burma', *Ohio State Univ. Bulletin*, 29 April 1922, pp. 1-322; ref. to p. 56.

¹⁰ Regarding the time, apparently only a few centuries ago, when the Kayans reached Borneo, see Hose and McDougall, *op. cit.*, II, 243.

¹¹ In northwestern China the peasantry often live in artificial caves excavated in loess bluffs. Whole villages of such 'houses' may be seen there.

¹² For pit-dwellings at Neolithic sites in northern China, see *ANTIQUITY*, 1933, VII, pp. 393 ff. The type occurs rather widely in the northern portions of both hemispheres.

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and upper Yangtse—river-banks are both lofty and steep. In such places the fronts of riverside houses often rest on the ground, at a level above the reach of floods; while their rearward portions project backward toward the stream below, supported on piles whose height varies directly with the degree of slope of the bank.

Again, when the depth and flow of water are slight, as often near the margins of ponds and small lakes, the house may, as in the previous instance, have its front on the ground but its remaining portions built out over the water, in which stand the supporting piles (FIG. 1). I do not recall an instance of a Chinese pile-dwelling that stood entirely detached from the shore.

Pile-houses are said to occur also among the Miao aboriginal peoples of southern China;¹³ but details as to their form and location appear to be lacking.

With the possible exception of the last, however, the above examples display few features (apart from the mere fact of erection on piles) in common with the typical 'long-house' described above. For what looks like a direct descendant of the latter, we must turn to a type of structure very common in central, southern, and especially coastal China—just those regions that were latest in being absorbed (and then only imperfectly) into the Chinese culture-group proper of the early historical period.¹⁴

This form of house is regularly long and narrow, with a gable roof and two storeys, one above the other and each comprising a single row of rooms (FIG. 2). About half way up, at the level of the upper floor and extending the entire length of the house-front, is a narrow and slightly projecting veranda or gallery provided with a hand-rail and covered by the overhanging edge of the roof above; on this veranda open the rooms of the upper tier (FIG. 3). At both ends of the house and sometimes inside the individual chambers also are steep flights of stairs.

Thus in principle this type of Chinese structure is identical, feature for feature, with the 'long-house' erected by the less advanced peoples to the west and south of China—save in one important particular. This single point of difference is that in the Chinese form the

¹³ S. R. Clarke, 'The Miao and Chungchia Tribes of Kueichow', *East of Asia Magazine*, 1904, III, 195.

¹⁴ The type of house in question occurs sporadically in northern China also; but there it seems to be a rather recent importation, quite distinct from the prevalent indigenous architecture.

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lower storey, instead of being merely an open space in which stand the posts or piles supporting the house proper above it, is enclosed by walls and divided by partitions. In this way the Chinese have obtained, at the ground level, a second row of chambers which corresponds in size and arrangement to the one above (the latter apparently representing the original house).

A building of identical type (though naturally differing in details and finish) occurs in Japan also, and is there called a *nagaya*—literally, 'long-house'. This too is provided with a long narrow veranda extending along its whole front, and is enclosed below as well as above, so as to have two tiers of rooms, a lower and an upper. Thus, like its Chinese counterpart, the *nagaya* displays all the essential features of the long communal pile-dwelling still found in Farther India, Indo-China, and Indonesia. That from the latter are derived both the Chinese and the Japanese forms seems likely from their plan of construction. This probability becomes a practical certainty when we find the peoples of both southern China and western Japan sharing, either now or formerly, in most of the culture-traits that elsewhere accompany this type of habitation.

What seems beyond doubt another and even less modified survival from a comparatively remote pre-Chinese past is the craft commonly called by foreigners the 'dragon-boat' (FIG. 4). This occurs in much the same parts of China as does the 'long-house' style of architecture just described, and it is used there in ceremonial boat-races.¹⁵ It is essentially a long narrow canoe, shallow of draught, with low free-board, considerable tumble-home amidships, and much overhang at the ends, which are elevated sometimes as much as 5 or 6 feet above the water. At bow and stern respectively are the (detachable) head (FIG. 5) and tail of a dragon, carved in wood and brightly painted; from these, this type of craft derives its name.

This practice of attaching the carved head, and sometimes tail also, of a monster (most often, naturally, one associated with water) to craft of the dragon-boat type is, as we shall see later, very widespread. There are indications that it owes its origin to the belief that by so doing the canoes are magically transformed into the creatures which they represent. In line with the same primitive way of thinking

¹⁵ In northern China also, boats sometimes appear at the dragon-boat festival; but these are merely much-bedizened pleasure-barges, not racing-craft, and are quite different in both form and function from the true dragon-boats of the south.

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is the fact that even today at the building of a dragon-boat certain ceremonies are performed, offerings made, and incense burned.

Dragon-boats vary considerably in length, from about 40 to well over 100 feet. Two which I measured on the middle Yangtse were each around 55 feet long by about 5 feet beam; and neither could have drawn (empty) as much as a foot of water. The type has a round bottom and lacks both keel and ribs, the place of the latter being taken in part by transverse bulkheads spaced about 2 feet 6 inches apart (FIG. 6). Carvel-built, the planking is thin though the gunwale-strakes are very heavy (FIG. 7). The fastenings are iron straps and cramps and the entire construction is strong yet flexible and elastic. The hulls are not painted, but are rubbed smooth, oiled, and even waxed before races; I have been told that formerly they were often lacquered. In some instances they have a red cloth canopy amidships (the post of honour), under which sits the master of the craft.¹⁶

All the dragon-boats that I have seen have been steered by means of a single long sweep which rested in a semicircular notch in the upper edge of the aftermost bulkhead and entered the water through an oval opening (see FIG. 7) in the bottom planking near the stern; but I have been told that some of the longer specimens are guided by means of two such sweeps, one on either quarter.

Sails are not used. The motive power is supplied entirely by files of men who sit, or sometimes kneel, two abreast along the gunwales, between bulkheads, and ply short square-ended paddles with transverse hand-grips mortised on to their loom-ends.¹⁷ Crews vary in size proportionately to the length of the boats, and range from 20 or 30 to upward of 100 men.

Capable of great speed, at least on a spurt, the dragon-boat is crank and is apt to 'hog' or even break in two in anything of a seaway. To guard against the latter danger, several turns of a braided (not twisted) bamboo hawser are taken about the gunwales and under the overhang at bow and stern (see FIG. 6). I also saw in one instance a true 'hogging-truss' which ran fore-and-aft in the median line of the boat, along the tops of the bulkheads.¹⁸

¹⁶ Verbal communication from Dr N. Gist Gee. In predynastic Egyptian representations of what are usually taken for boats, there often appears a canopy or cabin of some kind amidships.

¹⁷ The dragon-boat paddles that I have measured have all been about 3 feet long.

¹⁸ The use of a hogging-truss is apparently very old; it is represented, for example, as a fixed feature of the ships sent by Queen Hatshepsut to the land of Punt, as seen at Deir el-Bahri.

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The Dragon-boat Festival falls on the 5th of the 5th moon of the old Chinese calendar,¹⁹ and thus occurs during the early summer. Aetiological myths explaining the ceremony appear in slightly variant forms according to the locality. They all agree however in ascribing its origin to popular distress over the fate of some upright statesman who was unjustly disgraced and who thereupon committed suicide by throwing himself into the water. The people, the tale goes on to say, instituted a search for his body, and the custom has been kept up ever since, in commemoration.²⁰

In reality the rite appears to be one of rain-making in connexion with agriculture, and is pretty certainly of pre-Chinese origin. Not improbably it once centred about a human sacrifice by drowning, and embodied the very widespread notion of a 'dying god' and the return of the growing season.

Into the manner of celebrating the festival we need not enter, for it has often been described in detail.²¹ Our object here is merely to point out the ritualistic survival in parts of China of a type of craft existing, now or recently, over a wide area of southeastern Asia and the adjacent insular regions. Employed in China today only in the celebration of the Dragon-boat Festival, as lately as three or four generations ago it had there a considerably less restricted range of uses.

Thus the pirates, smugglers, and water-police of southern Chinese coastal regions utilized boats of this type until well on in the 19th century. The imperialist forces during their operations against the Taiping rebels, in 'Chinese' Gordon's time, also employed such craft, not inaptly dubbed 'centipedes' by the British tars who saw them urged into action.

As just intimated, this form of boat was by no means confined to Chinese waters. In Chinese accounts of the 3rd century A.D. we find mention of similar craft as coming from Fu-nan (roughly Cambodia and Cochin-China). These, we are told, were from 70 to 80 feet long by 6 feet beam,²² and had a carved fish's head and tail at bow and stern ;

¹⁹ Now abolished officially, though not in popular usage ; in it the year began on the first new moon after the sun's exit from Capricorn, the last of the three winter signs.

²⁰ It is scarcely necessary to point out the resemblance to the search for the remains of Osiris, as recounted by Plutarch.

²¹ See J. J. M. de Groot, *Les Fêtes annuellement célébrées à Emoui*, Paris, 1886 ; Lewis Hodous, 'The Great Summer Festival of China as observed in Foochow', in *Journ. North-China Br., R.A.S.*, 1912, XLIII, 69-80.

²² Note the similarity in proportions to those of the dragon-boats that I measured on the Middle Yangtse.

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they were propelled by means of paddles (there is no mention of sails)²³ and carried crews of about 100 men. This statement is of interest as showing that early in our era fleets of such great canoes were venturing on long voyages which beyond doubt involved the passage of considerable expanses of open sea. We shall discuss later on the probability that such voyages were taking place centuries earlier still.

Boats of a similar sort are mentioned as being used in Cambodia during the 5th century A.D. In them too, says the Chinese account, the place of honour is amidships ; it further states that the paddlers are protected from missiles by plaited work of rattan raised along the gunwales.

European visitors to Siam, from the early Portuguese onward, speak of such craft, hollowed from a single tree-trunk and with ends much elevated ; their freeboards are said to be increased by stitching planks along the gunwales. These gigantic dugouts are stated often to be well over 100 feet in length, with crews of as many as 150 men. The Siamese royal barge, of similar construction (FIG. 8), is described as 150 feet long by 11 feet beam, with a gilt pavilion amidships, the place of honour.²⁴

From Annam, Cambodia, and Laos we hear of craft of this type, decorated inside with red lacquer and outside in black and gold. In Arakan likewise, we find mention of long dugout canoes having at the bow the carved head of a crocodile—a feature recalling somewhat the dragons' heads of the Chinese craft already described, and even more the figureheads borne by the Bornean war-canoes which we shall discuss in a moment. Elsewhere in Burma also, similar craft were used. We hear there of long war-boats, hollowed from a single great teak log, with built-up sides, monster figureheads, and sometimes—at least in the later periods—propelled by rowing, not paddling ; oars as well as hulls were occasionally gilded. Simes in the year 1800 mentions such boats as being from 80 to 100 feet long but rarely of over 8 feet beam.²⁵ In their crews the British forces employed in the First Burmese War found their stoutest opponents.

²³ The first mention in the Chinese records of sailing-craft—and then apparently not of Chinese but of Western origin—refers to the 3rd century A.D. Sails seem not to have been much used in Japan until about the 9th century A.D.

²⁴ Sir John Bowring, *The Kingdom and People of Siam*, 2 vols., London, 1857 ; ref. to vol. I, pp. 116 ff.

²⁵ For an excellent description of these Burmese war-boats see Col. Sir Henry Yule, *Narrative of the Mission . . . to the Court of Ava in 1855*, Calcutta, 1857, p. 488.

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Turning now to the island groups off the coast of the Asiatic continent, we find this type of craft quite generally represented down to fairly recent or even modern times. Traces occur of its former presence in Japan, as for example in the 'many handed' boat of Kumano, now used only ritually.²⁶ Though during later periods Japanese craft have regularly employed sails and long sculls for propulsion, paddles have survived there, especially in ritual connexions. The great war-galleys of feudal Japan, though decked and using banks of sculls in place of paddles, seem to have developed out of an earlier form like the Burmese war-boats mentioned above. This evolution may however have taken place in China and been carried to Japan only later. For statements in the Chinese records indicate pretty clearly that decked craft of some sort were being used in that country as far back as the latter part of the 1st millennium B.C.,²⁷ when certainly nothing of the kind was yet known in the Japanese islands.

The natives of the Loochoo archipelago—that long crescentic chain of islets extending southwestwardly from Japan proper nearly to Formosa—employed for ritual purposes until quite recently long dug-out canoes with dragons' heads and tails at bow and stern and propelled by means of paddles.²⁸

Throughout Indonesia also, we find the same type of craft in use. This applies especially to Borneo, where nearly every village has at least one long war-canoe, hollowed out of a single log and communally owned. Here too, the freeboard is increased by lashing planks edge-wise with rattan to the gunwales. Amidships is an arched shelter of palm-leaves, for chiefs and men of distinction, and the bows usually terminate in conventionalized wooden heads of crocodiles or dogs, painted in black and red.

These Bornean war-canoes vary in length, from 70 or 80 to well over 100 feet, with a beam of 6 or 7 feet. They are propelled by means

²⁶ On this see W. G. Aston (tsl.), *Nihongi: Chronicles of Japan from the earliest Times to A.D. 697*, 2 vols., London, 1924; ref. to vol. I, p. 68.

²⁷ For example, a Chinese fleet of the late 2nd century B.C. is recorded as having transported an army of 50,000 men across the one hundred miles and more of open sea between peninsular Shantung and the opposite coast of Korea; but this seems to have been composed not of vessels of the dragon-boat type but of more developed form, with decks. There is nothing however to suggest that they had sails.

²⁸ W. H. Furness, 'Life in the Luchu Islands', *Bull. Mus. Science and Art*, Univ. Pennsylvania, 1899, II, 15.

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of paddles about 3 feet long,²⁹ wielded by crews numbering 60 to 70 men or even more. The paddlers line the gunwales two abreast, the two foremost and the four aftermost being responsible for the steering. This latter arrangement has a more primitive look than that found in the Chinese dragon-boats, with their specialized steering-oars in the form of long sweeps.

Bornean war-canoes are fairly seaworthy, and in calm weather may venture many miles out to sea. It must have been in some such craft, indeed, that the Kayans, for example, reached the island in the first place (see footnote 10, page 413).

Wherever this type of craft occurs—from Farther India eastward to Japan, from central China southward to Indonesia—we find it employed, in recent or ancient times, mainly for the waging of war afloat. Hand-in-hand with this use, however, has gone a ritual one, primarily the magical control of the seasons and the securing of bountiful crops by means of canoe-races. This latter function has tended to outlast the former—an excellent illustration of the power of religious conservatism.

This practice of ritual canoe-racing has been very widespread. Thus Diogo da Couto (*ob.* 1616) mentions a Siamese fête resembling in many ways the Chinese dragon-boat festival. In Burma, races of war-boats were held before the king, who was present apparently in his sacred capacity. Accounts of similar ceremonies reach us from Manipur (where also the king presided); from Laos, Cambodia, and Annam; from Java, Japan, and the Loochoo Islands.

In most places where we find great canoes of the above type, they are dugouts, hollowed from a single log. Now as already stated, those portions of China in which we find the dragon-boat are very nearly those where the 'long-house' style of architecture is most common; that is, they are precisely the regions latest to become assimilated (and that only partially) by the expanding Chinese culture-group pressing down from the north. Naturally earlier, because of its geographical position, than the areas to the south of it to undergo this process was the lower Yangtse basin, including what was anciently called the district of Yang.³⁰ That venerable Chinese book the *Yü Kung*, believed

²⁹ Note the similarly short paddles of the Chinese dragon-boats (see footnote 17, page 416). American Indian canoe-paddles that I have seen have usually been about 5 feet long.

³⁰ The river-name 'Yangtse' does not mean 'Son of the Ocean', as sometimes stated, but derives from the ancient region of Yang. The two 'Yangs', the one meaning 'ocean' and the other referring to the territory, though spoken in the same tone, are written with quite different characters.

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to date from well back in the 1st millennium B.C., states that Yang is notable for its luxuriant vegetation and great trees. The latter were also plentiful in ancient times throughout central and southern China generally. From the logs which they provided, undoubtedly, were hollowed the ancestral forms of the present-day Chinese dragon-boats, whose lines (though not their method of construction) so closely resemble those of their more primitive congeners in neighbouring lands.

Among the most striking phenomena of ancient Chinese social and political development was the way in which large organized states arose along the Yangtse River, successively downward from its upper waters to the sea.³¹ This movement seems already to have been well under way by the close of the 2nd millennium B.C., and to have continued for several centuries thereafter. It was apparently made possible in part by an organization, with bronze weapons, superior to anything that the Neolithic aborigines possessed; and in part by the extension of rice-culture, with its attendant increase in population and the acquisition of a way of accumulating reserve capital.³²

This movement of state-building along the Yangtse ended with the founding of the two kingdoms of Wu and Yüeh—roughly the modern provinces of Kiangsu and Chekiang. Both were in the former delta region of the great river (now reduced to a single mouth); and both formed part of the area where today we find the Chinese long-house and dragon-boat. These two states seem to have owed their origin, early in the first millennium B.C. or thereabout, to the advent of bronze-using invaders from more civilized lands higher upstream.³³ These newcomers appear to have established themselves as a ruling class among a population whose closest modern analogues we must seek in the peoples of Indo-China, Farther India, and parts of Indonesia.

³¹ In *Pacific Affairs*, vol. VII (Sept. 1934), pp. 297-325, 'Beginnings of North and South in China', I have attempted to recount some of the circumstances attending this interesting historical process.

³² In Japan, for example, until within living memory, official incomes were reckoned in terms of bags of rice.

There is considerable evidence, historical, traditional, and legendary, that the diffusion of rice-culture over many parts of the Far East has been relatively recent. It seems to have occurred mainly between 1000 B.C. and A.D. 1000, though beginning even before the earlier date.

³³ The legends on which this assumption is in part based are as a rule lightly dismissed as fables; but certain of their details seem to indicate that they contain a kernel of fact.

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Old Chinese records tell us that the people of Wu and Yüeh (in common, apparently, with most of the pre-Chinese inhabitants of eastern and southern China), tattooed themselves, wore their hair short,³⁴ and had few if any domestic animals other than dogs, swine, and fowls. They made little or no use of the bow,³⁵ and were ignorant of land warfare (at least of the kind practised by the ancient Chinese proper, who placed their main reliance on their chariotry).³⁶ They were, on the other hand, accomplished canoemen, thoroughly at home on the water. The wars that they constantly waged, against each other and against the more properly Chinese states to the west and north of them, were fought largely in fleets of canoes almost certainly similar in type to the war-boats later used by such peoples as the Burmese, the Siamese, and the Chinese themselves. In both Wu and Yüeh, moreover, certain boats were regarded as in some sense sacred and endowed with magical power; these appear to have been palladia of state, whose capture by the enemy was something to be avoided at any cost (FIG. 9).

It is interesting to note, as indicative of the essentially aquatic character of these ancient 'thalassocracies' of the lower Yangtse,³⁷ that it was a king of Wu who, to provide a waterway whereby his fleets might invade northeastern China, dug about 485 B.C. the oldest section of the Grand Canal—that part of it connecting the Yangtse and the Huai rivers; an undertaking incomparably greater in magnitude than the almost exactly contemporary cutting of the isthmus at Mount Athos by Xerxes.

³⁴ The ancient Chinese proper, of the Yellow River basin, wore their hair long and knotted in a sort of *chignon* on top of the head, as did the Koreans until quite recently. The queue or 'pigtail', often regarded as so peculiarly Chinese, was in reality only adopted by that people around the middle of the 17th century, under compulsion from their Manchu conquerors.

³⁵ Similarly, in large areas of Indonesia and Polynesia the bow was practically unused, though known. In regard to Borneo, see Hose and McDougall, *op. cit.*, I, 46.

³⁶ The military power of the various Chinese feudal states during their later Bronze Age (*i.e.*, for the greater part of the 1st millennium B.C.) was computed in terms of the number of war-chariots that they could put in the field. There was little regard for infantry, composed largely of untrained levies of serfs; and cavalry as an effective fighting force only began to appear toward the close of the period.

³⁷ Owing to the great changes which have occurred during the historical period in the hydrography of the region, what was once the territory of Yüeh no longer reaches the Yangtse; but anciently the latter's delta touched its confines, and old records could thus speak of the two states, Wu and Yüeh, as 'situated on the same river'.

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This riparian and maritime pre-Chinese culture, with its focus apparently in eastern and southern China, spread at an early date over the coasts of the China seas—to Indo-China on the one hand, on the other to peninsular Shantung, southern Korea, western Japan, the Loochoo Islands, and probably Formosa; later, to Indonesia also.³⁸ In the absence of sails, the cruising radius of the fleets that carried it must have been limited—its diffusion consequently slow. The lack of effective means of carrying a sufficient supply of drinking-water on board must also have been a hindrance.³⁹ Nevertheless it is becoming increasingly evident that considerably more navigation, overseas as



FIG. 9. MAGIC (?) CRAFT OF DRAGON-BOAT TYPE DEPICTED ON AN ANCIENT BRONZE DRUM, ANNAM

After Goloubew

well as coastwise, was going on before the appearance of the sail than is often supposed.

This diffusion of what is coming to be called the 'Yüeh' culture seems to have begun even before the knowledge of metals reached that part of the world, probably some time in the first half of the first millennium B.C. That it belonged to the complex described early in this paper is quite clear. One of its features was the prominent part assumed by goddesses and women in religious and other activities. Thus one of the oldest Chinese names for western Japan was 'the queen country'. Throughout the area occur legends of maiden sacrifice by

³⁸ It is perhaps worth noting, as an interesting modern survival of the essentially aquatic character of the old 'Yüeh' culture, that the Chinese stewards serving on so many of the passenger liners traversing the Seven Seas are almost without exception 'Ningpo boys'; and that Ningpo itself is situated within a few miles of the site of the ancient capital of Yüeh.

³⁹ Coopership was unknown in China until much later. Even today, rice-wine is kept in large and heavy earthenware jars covered with closely woven basketwork.

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exposure which recall in many ways the tale of Andromeda. The dog-progenitor myth is common still among the aboriginal tribes inhabiting the mountains of southeastern China. Ceremonial reinterment of the bones of the dead is a widespread practice, extending from the Nicobars to the Loochoos, from Farther India to Indonesia. Tattooing is still customary in the regions about the southern segment of China's periphery, and old Chinese records ascribe it to the peoples of Wu and Yüeh. In many areas (though apparently nowhere among the Chinese themselves) the loin-cloth and the *sarong* are yet worn. The *jhum* system of agriculture is still in vogue in lands, both continental and insular, adjacent to China; while that it was once practised in the latter country also is quite certain.⁴⁰ Numerous other parallels between the ancient Yüeh culture and those still found in so many parts of Indo-China and Indonesia could easily be enumerated.

Thus the culture-complex of which the long-house and the dragon-boat are surviving (though modified) features not only diffused itself widely over the Far East; but it also contributed an important ingredient to the formation of the historical civilization of China herself.

⁴⁰ Thus in the summer of 1924, the Freer Gallery's archaeological expedition unearthed abundant evidence, in the form of fire-reddened soil, charcoal, ashes, and stone adzes, of the former practice of *jhum* cultivation in eastern China.

PLATE I



FIG. 1. PILE-HOUSES AT ICHANG, JUST BELOW THE YANGTZE GORGES. (See p. 414)
In background (left) is visible a portion of a Chinese 'long-house'



FIG. 2. CHINESE 'LONG-HOUSE' IN PROCESS OF CONSTRUCTION
AT HANGCHOW NEAR SHANGHAI. (See p. 414)

PLATE II



FIG. 3. CHINESE 'LONG-HOUSE' AT ICHANG. (See p. 414)
Note the narrow verandah extending along the entire front of the building



FIG. 4. CHINESE DRAGON-BOAT, YANGTZE RIVER. (See p. 415)
From a photograph

PLATE III

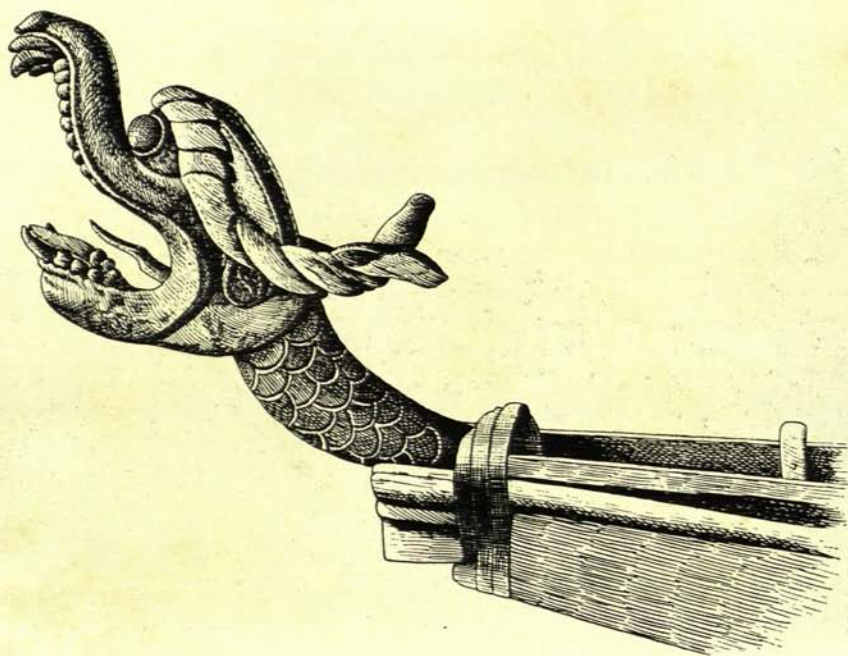


FIG. 5. ENLARGEMENT OF THE CARVED DRAGON'S HEAD SEEN IN FIG. 4. (See p. 415)

DRAGON BOAT
Ichang, Hupeh

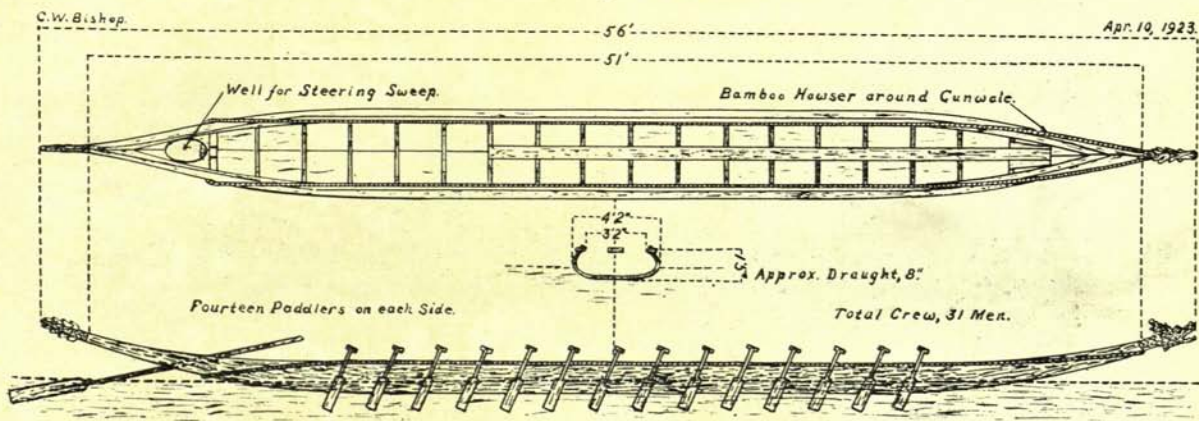


FIG. 6. 'DECK' AND SHEER PLANS OF DRAGON-BOAT, TAKEN FROM ONE AT ICHANG. (See p. 416)

PLATE IV



FIG. 7. DRAGON-BOAT UNDER SHED AT ICHANG. (See p. 416)

Note the elevated ends, heavy gunwale-strakes, and oval opening in bottom near stern, for steering-sweep
Tail, but not head, in place

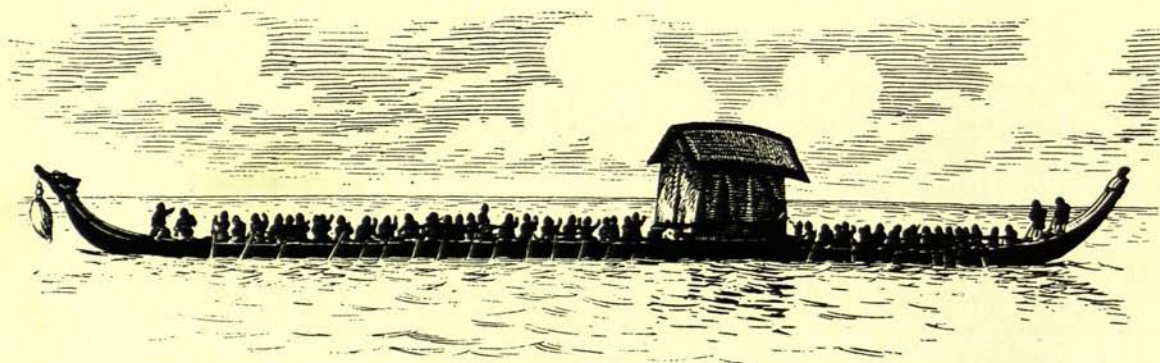


FIG. 8. SIAMESE ROYAL BARGE (See p. 418)

From a photograph

The City Nuzu

by SIDNEY SMITH

1. NUZI AND THE HURRIANS: the excavations at Nuzi (Kirkuk, Iraq) and their contribution to our knowledge of the history of the Hurrians. By Robert H. Pfeiffer. (From the Smithsonian Report for 1935, pp. 535-538).

2. ONE HUNDRED NEW SELECTED NUZI TEXTS. Transliterated by Robert H. Pfeiffer. With translation and commentary by E. A. Speiser. (Annual of the American Schools of Oriental Research, vol. XVI. New Haven, 1936).

3. NUZI: report on the excavations at Yorgan Tapa near Kirkuk, Iraq. By R. F. S. Starr. Volume II. Plates and plans. Cambridge, Mass., 1937.

4. NOTES ON HURRIAN PHONOLOGY. By E. A. Speiser. (Journal of the American Oriental Society, vol. 58, no. 1, pp. 173-201).

IN 1924 inscribed clay tablets were sent to Baghdad from Kirkuk, which drew attention to two sites in a region where little archaeological work had been done, one in the town of Kirkuk itself, and one at the deserted mound called Yorgan Tepe, some fourteen miles to the southwest. Miss Gertrude Bell, then Director of Antiquities, entrusted these tablets to Mr C. J. Gadd of the British Museum, for decipherment, and Dr William Corner, the Civil Surgeon at Kirkuk, who had interested himself in the discovery, collected much important information in the locality which made it possible to identify the site at Kirkuk as part of the ancient city of Arrapha, the capital of the province known to the Hellenistic world as Ἀρραπαχίτις, and Yorgan Tepe as the previously unknown (*al*)Nuzi, a name almost always found in the indirect case. The nominative of the latter in Akkadian should be Nuzu, and this form ought perhaps to be used rather than the generally accepted Nuzi. But the name is not Akkadian, it is parallel to Kakzu further north; so the case-endings do not in any case belong to the native name. Where the name does appear in the nominative, it is always possible to doubt whether the writing is purely phonetic, or should be regarded as an ideogram, 'the unknown', and only the context provides a means of decision.

Miss Bell very properly wished that this site should be excavated, and in the winter of 1924 the energetic Annual Professor of the American School at Baghdad, the late Edward Chiera, was able to start work with

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funds provided jointly by the American School and the Iraq Government, a most praiseworthy joint enterprise of a type all too rare. After a short time the Iraq Government ceased to support the dig, and funds were derived from American institutions, Harvard and the Fogg Museum. The leadership of the expedition changed rather frequently, owing to the constitution of the American School ; but work was carried on every season till 1930-31.

Not very much has yet been published about these excavations, as will be seen from the excellent bibliography in Professor Pfeiffer's account (no. 1), which is complete up to the time he wrote. It is regrettable that such good and fairly full annual reports as were published by the excavators at Ur, Uruk, Nineveh, Eshnunna and elsewhere, are not available. A volume of the final report has appeared (no. 3), but it is the second volume of the whole, and contains only plates. Archaeologists are bound to use this material, especially certain pottery and a class of seals belonging to the fifteenth century, because it is of vital interest for work now going on in Syria ; the publication of the plates before the explanatory text may, indeed must, give rise to much unnecessary speculation, and it is to be hoped the text-volume may speedily appear.

As far as our present information goes, the history of the site falls into two main periods, about 2500 B.C. and about 1500-1400 B.C. ; these datings are derived from clay tablets, the earlier set belonging quite certainly to the time of the Agade dynasty, and the later to the time of Saushshatar, king of Mitanni. The uppermost level belongs to the early centuries A.D., while test-pits have resulted in some finds of prehistoric seals and pottery, which are reinforced by work on a neighbouring mound. The main interest of the excavations necessarily lies in the two historic periods. Mr Starr, in the very brief foreword to the volume of plates, speaks of 'mixed types' representing the transition from the Akkadian to the later period, which seems to indicate a belief in the continuous inhabitation of the city. An odd tablet or two may be adduced in support of this view, of the style known as 'Cappadocian', belonging to a date about 2000 B.C. ; but there is very little indeed to show what filled this gulf of 1000 years. In this respect the site, as excavated, is a great disappointment, for there seemed every hope that the three dark centuries, 1800-1500, might be illuminated at Nuzu.

Of the Akkadian period there is not much to say. In the documents a purely Akkadian population appears, and the objects found

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do not differ in nature from similar material found at sites in Assyria and in southern Babylonia. The city itself in the documents is called GA-SUR; it is by no means absolutely certain how the signs thus conventionally transliterated were actually read, but clearly the name is not that which appears later, Nuzu. Whether this means that Nuzu was a name given by an invading people, the Khurri, as Professor Speiser believes, after the Akkadian period, is by no means certain. Ungnad, in his book *Subartu*, has pointed out that other towns have two names, and that the Akkadian documents are due to the exclusive needs of the ruling class; he considers that the population was never homogeneous, and that a 'Subaraean' element was always present. However this may be, it is quite clear that some great change took place in the districts east of Tigris before 1500, and we see some of the results at Nuzu.

The plans of buildings, without explanation, are not enlightening. This fifteenth-century city was a huddled mass of houses, with narrow streets on no particular plan; and the larger buildings, sometimes of very considerable extent, are hardly designed, but are just congeries of rooms fitted in anyhow. It is extremely difficult, until the excavators' account is published, to be sure why the terms 'temple' and 'palace' are employed. Anyone who walked over these ruins while the excavation was in progress may well have been confused; but the plans are not less so. Nuzu was not a royal city. It had an administrative centre; whether that be properly described as a palace now, or not, it may well have been called *egallu*. But the important thing to note is that it bears the marks rather of a communal building than of one devoted to the needs of the governor.

More instructive than the buildings is the appearance among the pottery, especially on the tall goblet shape which was widely spread over Mesopotamia, of a type of decoration not found in any of the many previous types of painted ware, namely, designs carried out in white paint, or reserved in the cream ground, on a black. Not a great number of examples were found, but they were immediately recognized by those who had seen the results of excavations at the city of Ashur which are, most regrettably, still unpublished. Recently, Mr M. E. L. Mallowan has found similar pottery at Brak, near the Khabur river in the Mitanni country, and Sir Leonard Woolley at Atchana, on the 'Amq plain east of Antioch. The decoration includes formal elements common in Assyria during many distinguishable periods, such as the rosette and palmette, but the four-square spiral and other patterns

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were formerly considered peculiar to the Aegean area. In the case of Atchana, in addition to examples in the formal style, there is a luxuriant style not yet exemplified at Nuzu, Ashur or Brak. The American excavators have dubbed this pottery 'Khurrian' because there was a preponderance of personal names at Nuzu demonstrably connected with the language in which Dushratta of Mitanni wrote to Amenophis IV of Egypt, a language which the Hittites, as is known from the Boghazkeui tablets, called 'Khurrian'. There is, however, a very real chronological difficulty. As Ungnad has pointed out in *Subartu* (de Gruyter, Berlin, 1936) it can be shown that Khurrian personal names occur in the Babylonian eastern provinces as early as the First Dynasty of Babylon, *i.e.*, the twentieth century B.C., and even earlier, under the Third Dynasty of Ur. Ungnad therefore calls these names 'Subaraean' in accordance with the geographical term Subartu, which goes back to the Agade period, 25th-24th centuries B.C. Whether the name 'Subaraean' be accepted or not—certain authorities¹ have criticized it—the chronological fact is that the pottery always seems to be fifteenth century, or thereabouts, whereas the 'Khurrian' personal names occur much earlier. It is, I think, desirable to avoid any racial nomenclature for pottery, especially in this case. The 'Khurrians' are at present vaguely known to us from linguistic evidence. The pots are found in those cities which were subject to, and ruled over by vassals of, Saushshatar, king of Mitanni, between 1500 B.C. and 1450 B.C. In this matter the remarks of F. A. Claude-Schaeffer² are pertinent. At Ras Shamra, where there is linguistic evidence for a population speaking a 'Khurrian' dialect, there is no pottery of the Nuzu-Ashur-Brak-Atchana type. The explanation may possibly be that Ugarit (Ras Shamra) was not directly tributary to Mitanni.

The seals found are instructive and form a class now fairly recognizable, and they are dated by these excavations to within a century. The styles of cutting vary; the material is usually haematite, the themes are numerous, some being derived from the old Akkadian cycle, some belonging to the so-called 'Syro-Hittite' style and some presaging later Assyrian themes. The interesting point to notice, for the history of culture, is that while for instance the seal of Saushshatar, king of Mitanni, who for a time ruled Nuzu, bears the scene of the hero with

¹ Such as Friedrich, in *Zeitschrift der Morgenländischen Gesellschaft*, Band 91, pp. 204-14, and A. Götze, *Journal of the American Oriental Society*, vol. 57, pp. 104-9.

² *Syria*, 1938, pp. 35-36.

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crossed animals familiar in the early Sumerian and Agade periods, that theme is never used, to our knowledge, in the Kassite period of rule at Babylon. The significance of these themes on seals has been treated by A. Moortgat,³ but I am by no means convinced that his argument explains the phenomena. The seals were, I think, invariably made by members of a guild, who supplied the subjects ordered. Why the kings of Mitanni, and later the nobles of Assyria and of the Persian Empire favoured subjects derived from very early prototypes requires investigation, I suspect, not on aesthetic, but on heraldic, lines.

We must turn from the archaeological publication, without dealing with some interesting terracottas and bronzes, after once again expressing the hope that a satisfactory account of the excavations may be published very soon, to the texts of the fifteenth century. Of these, the translations in *One Hundred New Selected Nuzu Texts* (no. 2) give a good general synopsis, which can at need be filled out by reference to Pfeiffer's bibliography and Speiser's notes. The documents are written in cuneiform signs of a *ductus* more closely resembling the Assyrian than the Babylonian. The language employed is Babylonian, but often the orthography, that is, the way the syllabic signs are handled, is un-Babylonian; there is a confusion between *fortes* and *lenes* common in the northern areas, and constructions unusual elsewhere, or ungrammatical, are employed. The reason for these local peculiarities has been found, not unreasonably, in the fact that the main portion of the population spoke the language called by the Hittites 'Khurrian'. A bold effort has been made, on this basis, to discern some of the phonetic and grammatical peculiarities of 'Khurrian'; Speiser's 'Notes on Khurrian Phonology' (no. 4) is not only a useful account of the material available and of the course of previous discussion, but contains some criticism of methods employed. I am inclined to be even more sceptical than Professor Speiser about any arguments as to sound derived from writing of any kind, and am unable to see that the existence of some 'Khurrian' words in the alphabetic writing of Ras Shamra assists very much. The signs of that alphabet are symbols: they cannot be supposed to render all the sounds of the language, or, in any one case, always the same sound. As to the grammar, we may be able to explain certain oddities in the Akkadian of Nuzu when we know something more of Khurrian, but not *vice versa*. It would be impossible to say anything about Gaelic if we only had renderings of a

³ *Die bildende Kunst des alten Orients und die Bergvölker.*

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Highlander's English, though it is easy to explain the oddities of that English from Gaelic.

The important feature of the tablets is that they introduce us to a social organization and to forms of law not known in Babylonia and Assyria. Thus the tenure of land was subject to restrictions on sale which led to a fictitious form of adoption. With the inheritance of real property went the inheritance of household gods, a nomad custom. Some officials are given titles that belong to the Khurrian language, a noteworthy feature, for in other provinces the exclusive use of Babylonian or Assyrian nomenclature is usual; the use of such titles points, I think, to an organization not originally developed in city states, and not comparable to Babylonian administration. For a discussion of features of the law practised the reader should consult P. Koschaker,⁴ where he will find some interesting examples of the growth of law by the adoption of like forms for disparate procedures, in accordance with Maine's hypothesis.

The hundred texts chosen by Professors Pfeiffer and Speiser are divided into four sections. The first deals with a series of complaints brought against a mayor of the town named Kushshi-kharbe, a name which is probably Kassite, as Speiser points out. The counts on which he is indicted in various cases are perversion of public labour to private work, acceptance of bribes, threats of violence, and collection of ransom from victims. No such record exists in cuneiform literature of the prosecution of an official, and the documents are interesting because they show the nature of the court before which the various statements are made; it is a court empowered only to draw up a *procès-verbal*, without any power of decision. The second section is concerned with the dealings of a woman called Tulpunnaya, a very typical lot which includes examples of nearly every type of document found at Nuzu. The third section consists of lists of oil rations set apart for various deities, of importance because of the names of the gods and the localities mentioned. In the last section miscellaneous texts illustrating important points for study are included. The two editors have laid all students under a debt, for the work has been most carefully done. Professor Speiser's commentary is frequently brilliant, always enlightening. Special mention should be made of his argument that *kinahhi*, 'Canaanite', as applied to wool, means 'red purple'; it was

⁴ *Neue keilschriftliche Rechtsurkunden aus der El-Amarna Zeit* (Leipzig; Abhandlungen d. Phil.-hist. Kl. der sächsischen Akademie der Wissenschaften, xxxix, no. 5).

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presumably derived from the name of the land of Canaan, and in turn the meaning led to the Greek name 'Phoenicia'.

No one interested in recent developments in Syrian archaeology can neglect the publications dealing with Nuzu. The problem presented is a very complex one, but of great interest, which may be thus stated. Nuzu is the easternmost example of a material civilization in the 15th century B.C., which, while based on and closely akin to Babylonian, is sharply differentiated from contemporary Babylon. Where this civilization occurs there is generally proof that a proportion of the population bore Khurrian personal names. But sometimes the Khurrian language occurs in places where the distinctive material objects are not found. And the distribution of the Khurrian names is found much earlier than the material civilization. At present no adequate explanation can be put forward with full reasoning; for that we must await reports from Sir Leonard Woolley, Mr Mallowan, and the much longer delayed accounts of the excavators of Ashur and Nuzu.

ADDENDUM

An interesting contribution to our knowledge of ancient calendars has just been made by Drs. Cyrus H. Gordon and E. R. Lacheman, 'The Nuzu Menology', in *Archive Orientalni*, 1938, vol. 10, nos. 1-2, pp. 51-64. The writers prove that two calendars were used side by side, one of Khurrian, one of Semitic origin, and that the latter was not of Babylonian origin.

Readers who desire general information on the Khurri should consult A. Götze, *Hethiter, Churriter und Assyrer* (Oslo, 1936) or G. Contenau, *La Civilisation des Hittites et des Mitanniens* (Paris, 1934).

Hertfordshire Place-names*

by O. G. S. CRAWFORD

IF one were asked to indicate the best contemporary products of English research in the field of historical studies, using the term 'historical' to include also archaeology, one would certainly put the publications of the English Place-name Society near the top of the list. It is characteristic of English methods that so much of our best work in these subjects should be subsidized by voluntary contributions; for though the EPNS receives a small annual grant from the British Academy, the greater part of its work is unpaid, and the most expensive item, the annual volume, is entirely paid for by the subscribers. One can think of half a dozen other comparable undertakings, all organized on a voluntary basis. This state of affairs cannot logically, however, be used as an argument against the State endowment of research (though it sometimes is so used), because it cannot be proved that, if thus endowed, work of this kind would be done less well. Indeed, to those who know the individuals responsible, the mere suggestion is fantastic and absurd. One has only to refer to the Reports of the Royal Commissions on Ancient Monuments (particularly those for England) which are wholly subsidized by the State, to see that the work of government officials is not necessarily or always bad; and other instances may occur to our readers.

One of the great advantages of the voluntary system is that it ensures regular and punctual publication. Every year subscribers receive a volume on the place-names of an English county; and there is evident a tendency to improve and expand, though the standard set by the earlier volumes was itself a very high one. The fuller treatment of field-names is one of these welcome recent improvements; so are the little sketch-maps showing the distribution of certain common elements such as *-ingas*, *-ham(m)*, *-tun*, etc. It is, to the reviewer, a standing wonder that so much detail should be marshalled in almost

*The Place-names of Hertfordshire, by J. E. B. GOVER, ALLEN MAWER, and F. M. STENTON. English Place-name Society, vol xv, 1938. Cambridge University Press, 18s.



DIAGRAM INDICATING THE PROGRESS OF THE WORK OF THE ENGLISH PLACE-NAME SOCIETY

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faultless array by so small a staff. Everyone who has tried it knows that the amount of work involved in tabulating facts is infinitely greater than in the composition of continuous narrative, the liability to error far greater, and the results, when published, misleadingly disproportionate in apparent volume to the labour of preparation. To review work of this character is difficult. The standard of accuracy is so high that there are few openings for criticism, and if one criticizes a few minor points, it still remains true that 99 per cent. or more of the book deserves unstinted praise.

The Introduction is, as usual, a delight to read, both for form and content. Hertfordshire is described as an 'artificial' county, without geographical unity, the product of Edward the Elder's reorganization early in the 10th century. It 'cannot have been a region of primary Anglo-Saxon settlement' (p. xiv). On the other hand, only five of the county's surviving place-names are certainly of Celtic origin—four river-names and the district name 'Chiltern'. Yet Hertfordshire contained an important Romano-British town (Verulamium), whose survival into the 5th century is historically attested by the mission of St. Germanus and is the classic instance of such survival. In addition there was a 'camp' at Braughing, midway between Verulamium and Camulodunum (Colchester), near an important junction of Roman roads.¹ There were several Roman villas in the county, and a group of native settlements is to be inferred from scattered remains round Hitchin. Perhaps it may be suggested that its life in Romano-British times was on the whole rather urban and artificial; that it quickly relapsed during the Dark Ages into a more primitive form, allowing the forces of nature, particularly trees and scrub, to regain partial control; and that when the tide of settlement turned again to reclaim the region, the older names were submerged or had already been lost. That the older Celtic language did survive late there is suggested, as the only 'plausible theory', by the name of the river Beane in the Anglo-Saxon Chronicle (Beneficcan). The survival of a pre-Saxon element in the modern population of Hertfordshire was, of course, suggested long ago by Beddoe, on purely anthropological grounds. Such a theory is, moreover, in agreement with Dr Wheeler's explanation

¹The ramparts were discovered recently in Gatesbury wood, and Gatesbury should be added to the list of 'camps' on p. 243. Abundant remains of an important early settlement have been found just outside it. I am indebted to Mr M. R. Hull of Colchester and Mr Christopher Hawkes of the British Museum for the information about this site, which I have visited.

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of the purpose of Grim's ditches (*London and the Saxons*, 59-74, and *Antiquaries Journal*, 1934, xiv, 254-63).

The following minor observations are offered. 'Thames' (p. xiii) must be a misprint for 'Thame'. The explanation of Shootersway given on p. xx seems inconsistent with that on p. 49 (*scocere* for *sceācere*?). Moreover, is it certain that the word here involved is not *scucca*, a demon? In support of the derivation given ('Thieves' way, from *sceācere*), however, are several other instances of old roads called 'Thieves' Lane or Thieves' Way, one of them in Hertfordshire ('Thieves' Street in Reed and Therfield, p. 161). It is nice that Puckeridge means what it seems to, the ridge of Puck, and suggestive that the hamlet should be situated on Ermine Street at the meeting-place of five Roman roads, within a mile of the Gatesbury camp. The celebrated Six Hills beside the Roman road south of Stevenage are referred to in 1295 (Sixburwefeld); it might have been added that they are certainly Roman.² (They are visible from the train, on the Great Northern main line, just south of Stevenage Station, on the east side). The strange name Nasty (p. 134), in Great Munden, was the home of Henry de Nasthey (1294) and goes back to the Middle English *atten ast hey*, at the east enclosure. Arbury Banks in Ashwell (p. 153) is a camp and a derivation from ME *hereberge*, harbour, would seem more probable than from OE *eorth-burh*, earthwork, and is supported by the modern pronunciation (Harburra), and the form quoted Herburghgate (1406). Highley hill in the same parish (Nilowe, in 1327) is derived from *nigon*, nine, and *hlaw*, mound; and it is suggested that there was a large group of barrows formerly, of which now only two survive. This suggestion is confirmed by one of Major Allen's air-photos (4/34) which shows evident traces of barrow-circles in the immediate vicinity. The biggest remaining barrow (which is visible from a distance and almost a minor land-mark) is locally known as Pancake Hill and there is said to be some folk-lore about it. (These facts are all recorded in manuscript on maps in the Archaeological Department of the Ordnance Survey). Metley hill (p. 168) is called Tree Barrow on the 2-inch manuscript map of 1804-5 from which the 1-inch Ordnance Map was engraved. Bygrave (p. 155) is *Biggrafan*, by the entrenchments; the earliest mention is in 973, but the earth-works there would otherwise have been assigned (from their present superficial appearance and plan) to a much later date. Pen hill in Therfield is undoubtedly a secondary name derived from Penbottome

² See the article on Roman Barrows in *ANTIQUITY*, 1936, x, 37-53.

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(1676) where are a number of 'valley entrenchments' or pennings of (probably) medieval date. The explanation of *dell* on pp. 252-3 is thoroughly sound; but surely it can never have borne the same meaning as *denu*? *Dell* meant a chalk-pit, usually a vertical shaft (which often collapsed and left a round depression); the name (now applied also to *open* chalk-pits) abounds in north Hampshire. *Denu* on the other hand meant a valley, a natural feature and much bigger. I believe that place-names with 'Deadman' originated with the discovery of human bones there, and not that there is any reference to any particular 'fatality' that was known and remembered. The common name 'Deadman's grave' suggests that 'Deadman' meant 'corpse' or 'skeleton'. Under Devil's Dyke and Grim's Ditch (p. 7) reference should have been made to Dr Mortimer Wheeler's recent excavation reports, rather than to the V.C.H., which has now naturally become out-of-date.³

Surviving field-names have been collected, we gather, by school-children (p. VII); it is to be hoped that they have at the same time been written on the 6-inch Ordnance maps, for permanent record.

Four celebrated ancient roads, Akeman Street, Ermine Street, Watling Street, and the Icknield Way, all pass across the county, and it is interesting to note that all are recorded there by the earlier forms of these names.

Finally, we would urge all those interested in early English history to support a good institution, and one that is very much alive at the present time (Director, Sir Allen Mawer, University College, Gower Street, London, W.C. 1; annual subscription, 25s). This recommendation is particularly directed to the attention of Libraries, both in this country and in America; for it is still possible to obtain a complete set of the volumes published.

³ See for example his article in *ANTIQUITY*, 1933, VII, 21-35; on p. 26 is a full-page plan of the Devil's Dyke oppidum. The definitive accounts are those published, as articles or Research Reports, by the Society of Antiquaries of London.

The City Walls of Nicaea*

by ALFONS MARIA SCHNEIDER

THE village of İznik, north-east of Brussa, and far from all trade-routes, is today the mere ghost of what was once an important city.

It is quite hidden within the ancient circumvallation, and occupies scarcely a third of the former area of the town. The wall itself, one of the most impressive and best-preserved Byzantine monuments of Asia Minor, forms an irregular polygon (plan, FIG. 1). The *lacus Ascanius* washes it on the west, while the other sides are bordered by a green, well-wooded plain, gradually giving place on the north-east to the slopes of Elmalı dagh. A charming view of the village and walls can be obtained from a small knoll about 300 metres east of the city, with the lake shimmering in the distance and the fields shaded with cypresses, planes, walnut and other fruit-trees. The description of Catullus still holds good (*Nicaeaeque ager uber aestuosae*, 46.5): nature here is inexhaustible, and gives in abundance of the finest fruits to anyone who tills the earth. From May to October the weather is nearly always good, and in the height of summer the heat can be unbearable. Certainly the air is no longer pure and healthy as it was in Byzantine days; neglected water-courses and pools of subterranean water have brought malaria in their train. Nor is the sea alive with boats, for there is no fishing. Yet within recent years an improvement has taken place in those conditions which gave older travellers reason for feeling melancholy or annoyance, and it begins to look as if the village were slowly awakening from its long sleep.

As rival to Nicomedia, no small part was played in Roman, Byzantine and early Ottoman times by the ancient Bithynian settlement of Ankore, which was made a city by Antigonus Cyclops in 316 B.C., and named Nicaea by Lysimachus. Nothing remains today of the Hellenistic circumvallation, which, Strabo tells us (12.565), was 16 stades in extent (2893 m.). But the existing wall measures 4970 m., so that the ancient enceinte enclosed considerably less ground, and it

* Translated by Professor R. G. Austin.

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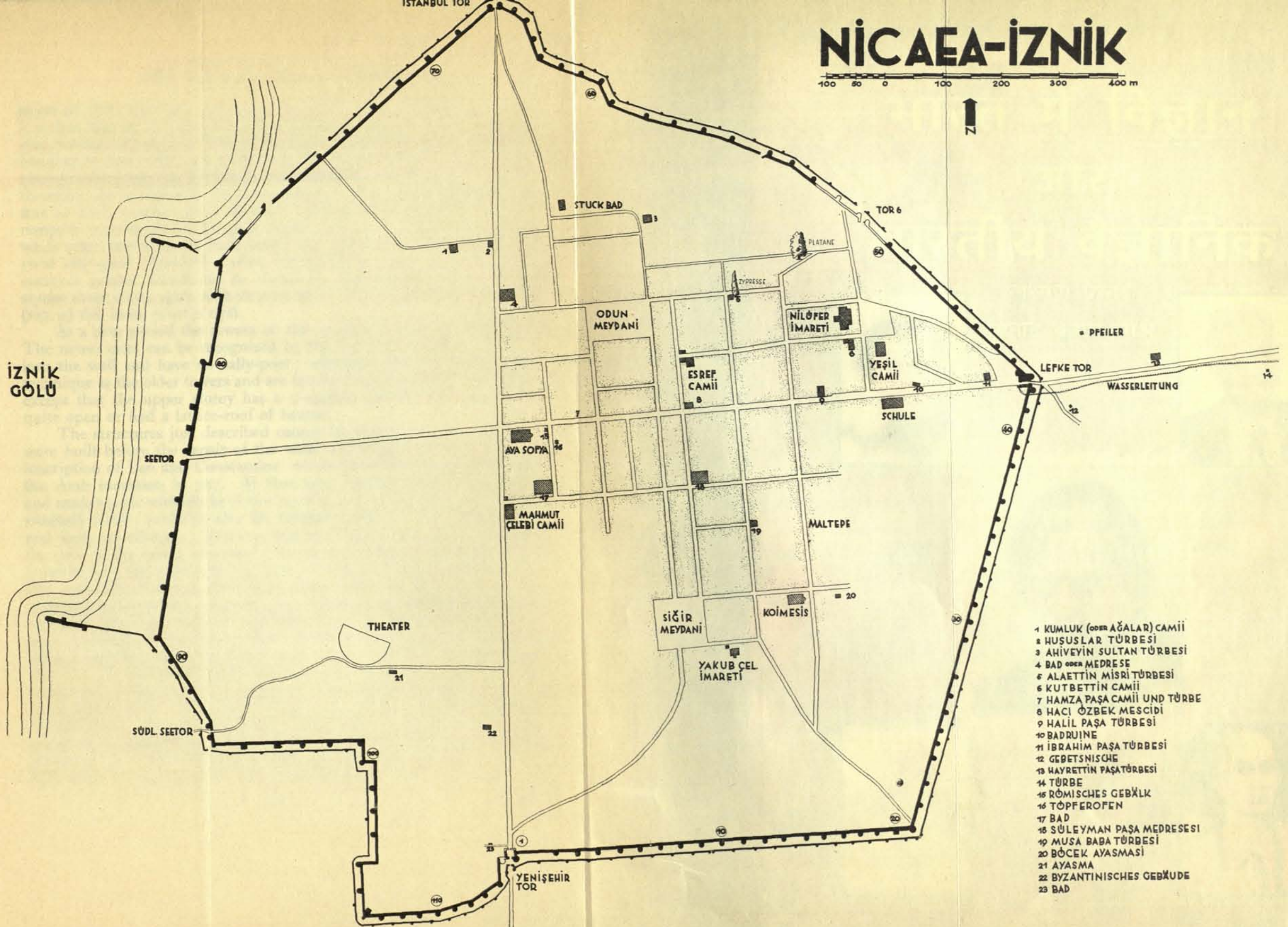
is doubtful if it coincided anywhere with the later one still to be seen. We do not know when the Hellenistic walls were abandoned ; but this very likely took place in the early Empire, for the Roman arches used in the construction of the Stambul and Lefke gates (PLATES I, II), which probably mark the limits of the already enlarged city, may be dated to the year 78-79 from inscriptions of Plancius Varus. It is uncertain whether these archways already had walls joined to them, but we may conjecture that the line of walls was not constructed until Hadrian's time, when Nicaea was rebuilt after the earthquake of 123. However, this rebuilding does not appear to have been a very solid piece of work, for much damage was done to the city by the invasion of the Goths in 258, and new fortifications were at once put in hand to suit the changed conditions. Numismatic evidence shows that the work was begun under Gallienus, continued by Macrinus and Quietus (260-1), and completed under Claudius Gothicus in 268-9 (see the inscription on the Yenisehir gate, *C.I.G.* 3748. After this our sources are silent for a long period. We cannot ascertain whether or when the late-Roman fortifications were destroyed, or who built the walls which are substantially still standing, if a reconstruction was actually made. The earthquake of 368 (attested by various sources) did much damage in the city, but we hear nothing of a reconstruction of the walls. It is not until 727, in an inscription of Leo and Constantine, that we have evidence of fairly extensive repairs. Therefore only a searching examination of the walls themselves will throw light on the problem. This has produced the following results.¹

The walls and towers of the oldest existing structure are built in the usual late-Roman method, with courses of masonry alternating with courses of brick. The walls of Constantinople show exactly the same technique (see *ANTIQUITY*, 1937, XI, 465), only with this difference, that there the masonry consists of neatly-cut square flags, whereas in Nicaea irregular boulders have been used, trimmed on the outside only. But the joins are neatly covered with a reddish dressing, giving the effect of a smooth outer surface. The curtains, some 3.6 m. broad by 9 m. high, rest generally on a socle of stone which often bears Roman inscriptions. The towers, which are semicircular and 9 m. in breadth, are placed at a distance of about 60-70 m. apart, and are built into the wall ; but their outer casing, unlike that of the wall, consists entirely of brickwork (PLATE II, 2). Not many of these towers remain, and such

¹ See A. M. Schneider and W. Karnapp, '*Die Stadtmauer von Iznik*', *Istanbuler Forschungen*, 1938, vol. 9.

NİCAEA-İZNİK

100 50 0 100 200 300 400 m



- 1 KUMLUK (ODER AĞALAR) CAMİİ
- 2 HÜSUSLAR TÜRBESİ
- 3 AHİVEYİN SULTAN TÜRBESİ
- 4 BAD ODER MEDRESE
- 5 ALAETTİN MİSRİ TÜRBESİ
- 6 KUTBETTİN CAMİİ
- 7 HAMZA PAŞA CAMİİ UND TÜRBE
- 8 HACI ÖZBEK MESCİDİ
- 9 HALİL PAŞA TÜRBESİ
- 10 BADRUINE
- 11 İBRAHİM PAŞA TÜRBESİ
- 12 GEBETSNISCHE
- 13 HAYRETTİN PAŞA TÜRBESİ
- 14 TÜRBE
- 15 RÖMISCHES GEBÄUL
- 16 TÖPFEROFEN
- 17 BAD
- 18 SÜLEYMAN PAŞA MEDRESESİ
- 19 MUSA BABA TÜRBESİ
- 20 BÖCEK AYASMASI
- 21 AYASMA
- 22 BYZANTINISCHES GEBÄUDE
- 23 BAD

FIG. 1. PLAN OF NICAEA (İZNIK) SHOWING THE PRINCIPAL GATES AND TOWERS

THE CITY WALLS OF NICAEA

as are left have been much damaged by earthquakes, and patched. But it is clear that they all have a sally-port at the ground level, vaulted with clay, leading into the tower from the city side and then, inside the tower, bending to the right and so leading outwards. At the level of the ramparts the tower usually had a storey without embrasures, which was therefore not intended for defence purposes : the tower platform alone was so used, reached by a stairway leading up the back wall. The ramparts were accessible by great flights of steps built against the wall, while other stairways are built inside the wall itself. The plan of the great city gates (Stambul, Lefke, Yenişehir) is such that behind the entrance proper, which can be closed by a portcullis, there is also a square inner court, again with its portcullis. At the Stambul gate alone (FIG. 2) this inner court is oval.

At a later period the towers on the south and west were doubled. The newer ones can be recognized by the fact that they are not built into the wall and have no sally-port ; otherwise they show the same technique as the older towers and are hardly distinguishable from them, except that the upper storey has a u-shaped outline, and was either quite open or had a lattice-roof of beams.

The structures just described cannot be directly dated ; but they were built before the repair of the walls and towers referred to in an inscription of Leo and Constantine, which must have been made after the Arab incursion in 727. At that time several towers were cased and made square with blocks of fine marble, and part of the curtains were similarly faced ; probably also the ramparts were covered with marble and then crenellated. Scraping behind the Stambul gate established the date of the earlier structure : for if one stands in the inner court it can be seen that where the wall turns westwards from the tower on the left, a stretch of casing about 8 m. long is not smooth and built for appearance as elsewhere, but was here built on to an already existing wall. On closer inspection it can be established that on this stretch of wall the negative impression of finely-fitted masonry may be seen. Scraping showed that the wall of the first period was set in front of an older brick wall (FIG. 2), and the masonry was forced into the outer plaster of this earlier wall : thus we have before us a wall which is only apparently made of masonry. Certainly no one will consider this of Byzantine construction ; nor can it belong to the period of Claudius, for a wall intended to withstand a siege would not be amateurishly plastered. Therefore it can probably only date from Hadrian's time, *i.e.*, it was built after the earthquake of 123. It follows further that the walls with

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the alternating courses of brick and the built-in towers date from the time of Claudius Gothicus, and do not belong to the Byzantine period as has hitherto been assumed. The late dating of this type of wall is caused entirely by the supposition that such a technique is specifically

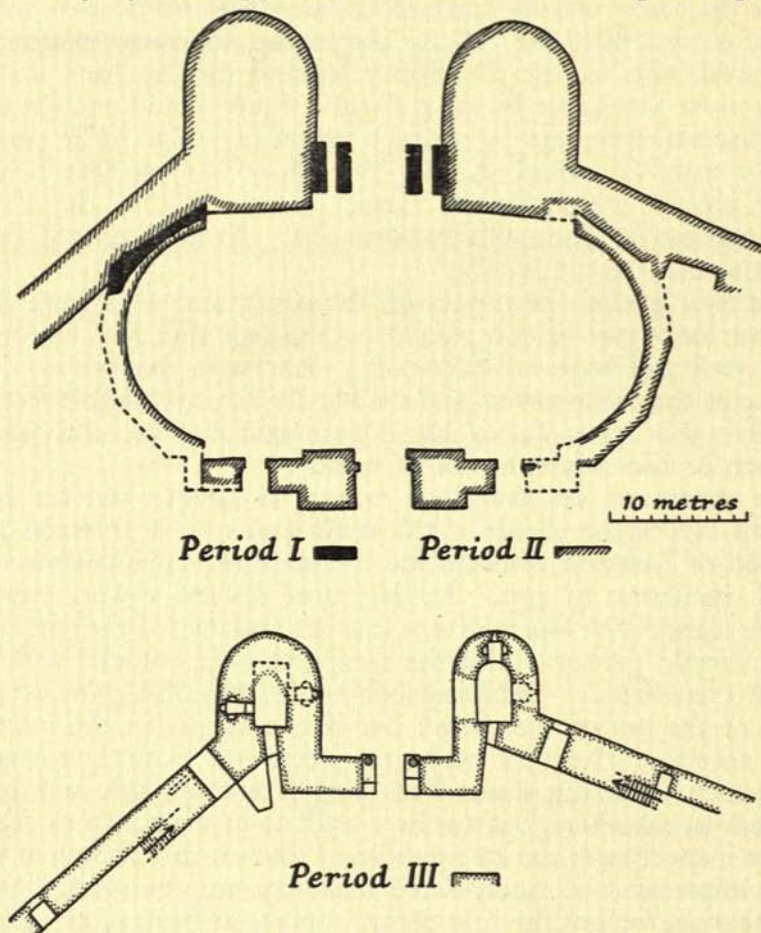
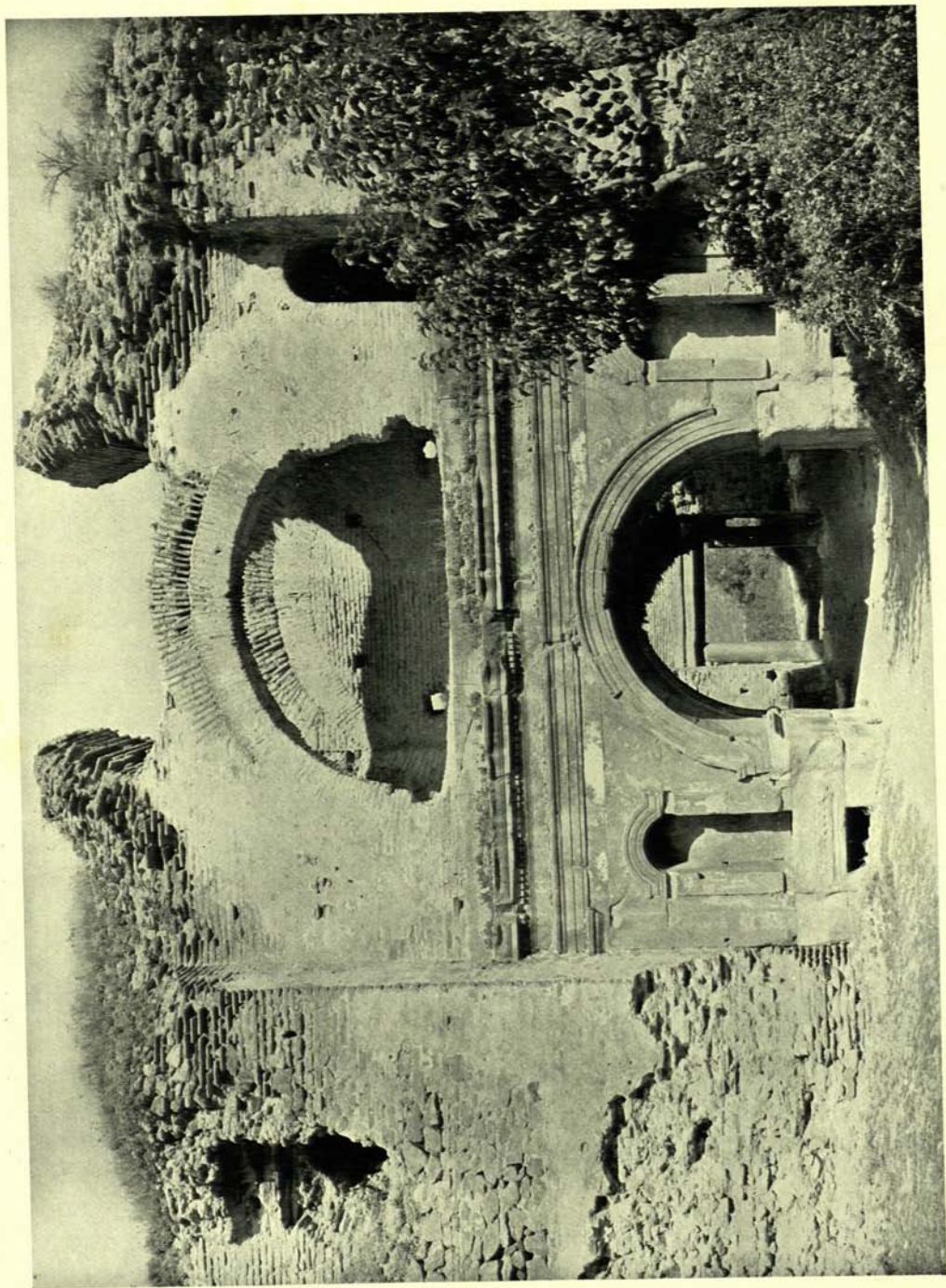


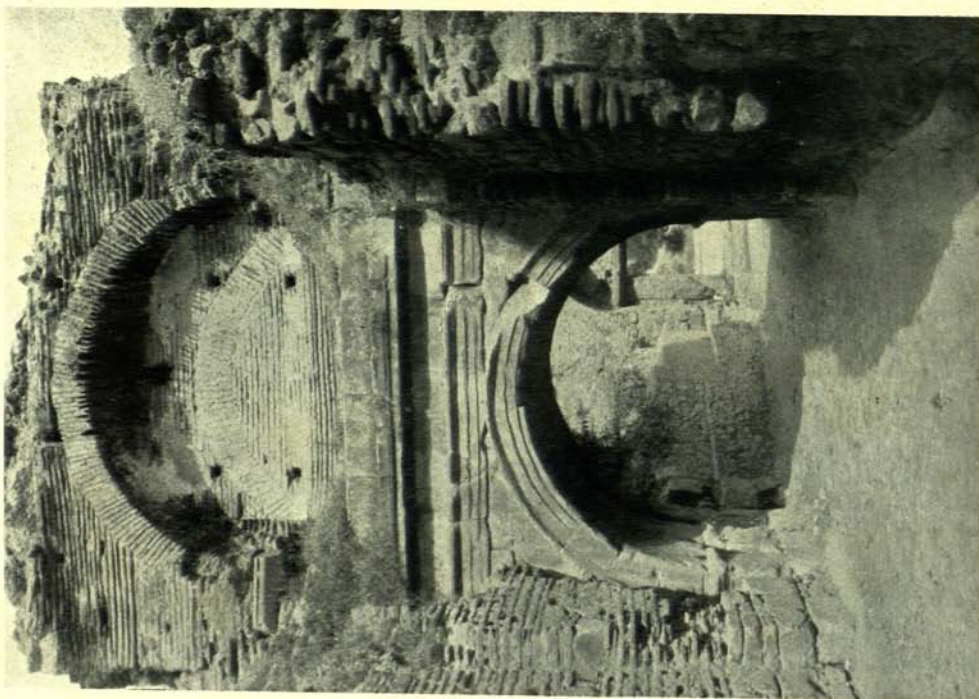
FIG. 2. STAMBUL GATE, NICAEA, SHOWING THE PERIODS OF CONSTRUCTION

Byzantine. This is untrue, as regards both period and provenance. Such work is found in many places in Gaul and Britain—*e.g.* Tours, Deutz, Orléans, Dax, Strasbourg, Burgh Castle, Carnarvon, Lympne, Porchester, Verulamium, and in Old Cairo (see *ANTIQUITY*, 1930, IV, 484). We may infer therefore that this technique was evolved in Gaul

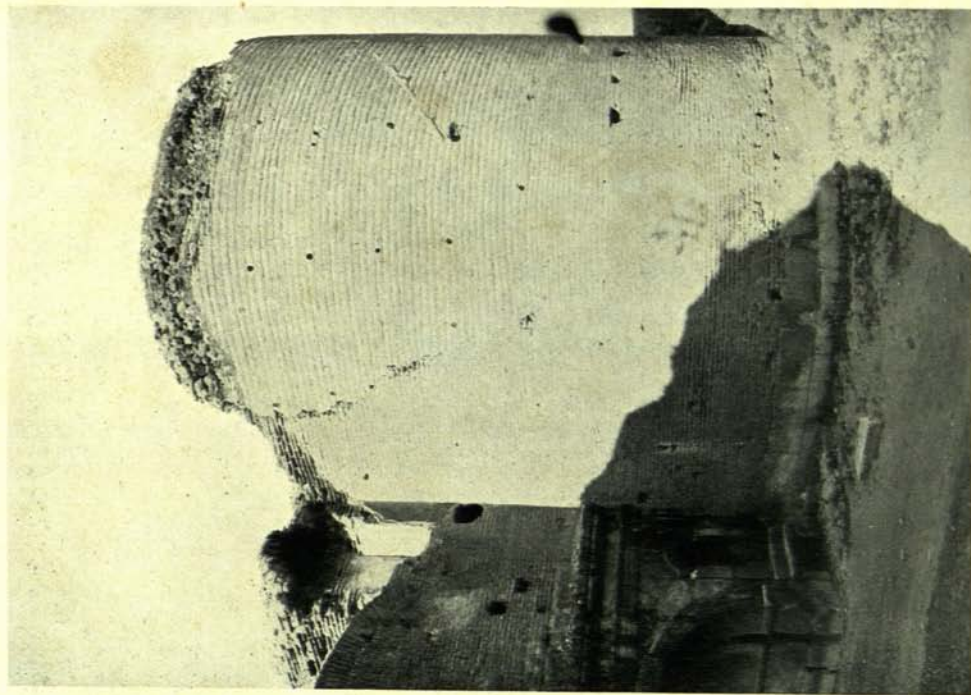
PLATE I



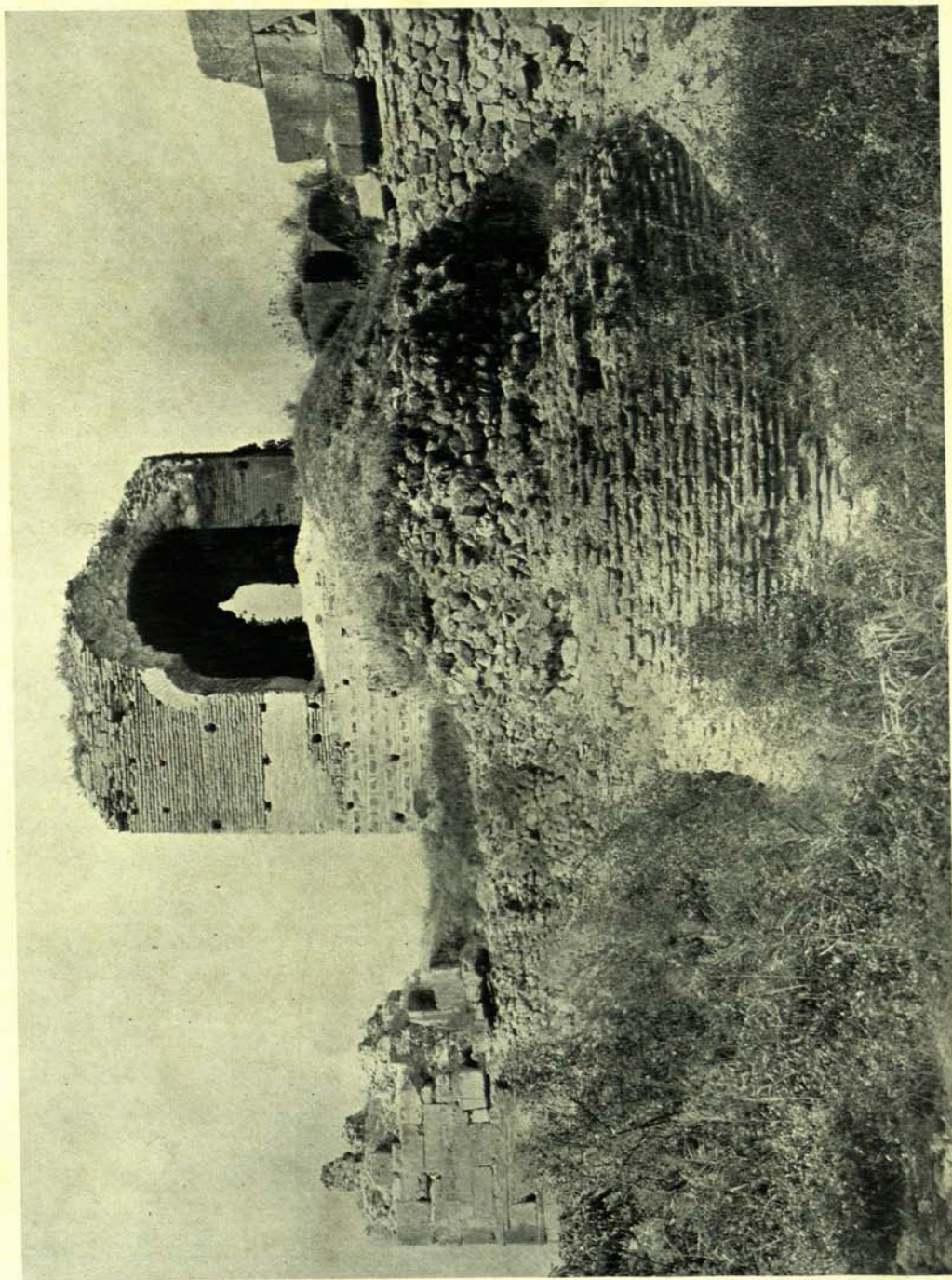
ROMAN ARCHES, STAMBUL GATE, NICAEA (IŹNIK). (See p. 438)



1. LEFKE GATE, NICAIA. (See p. 438)

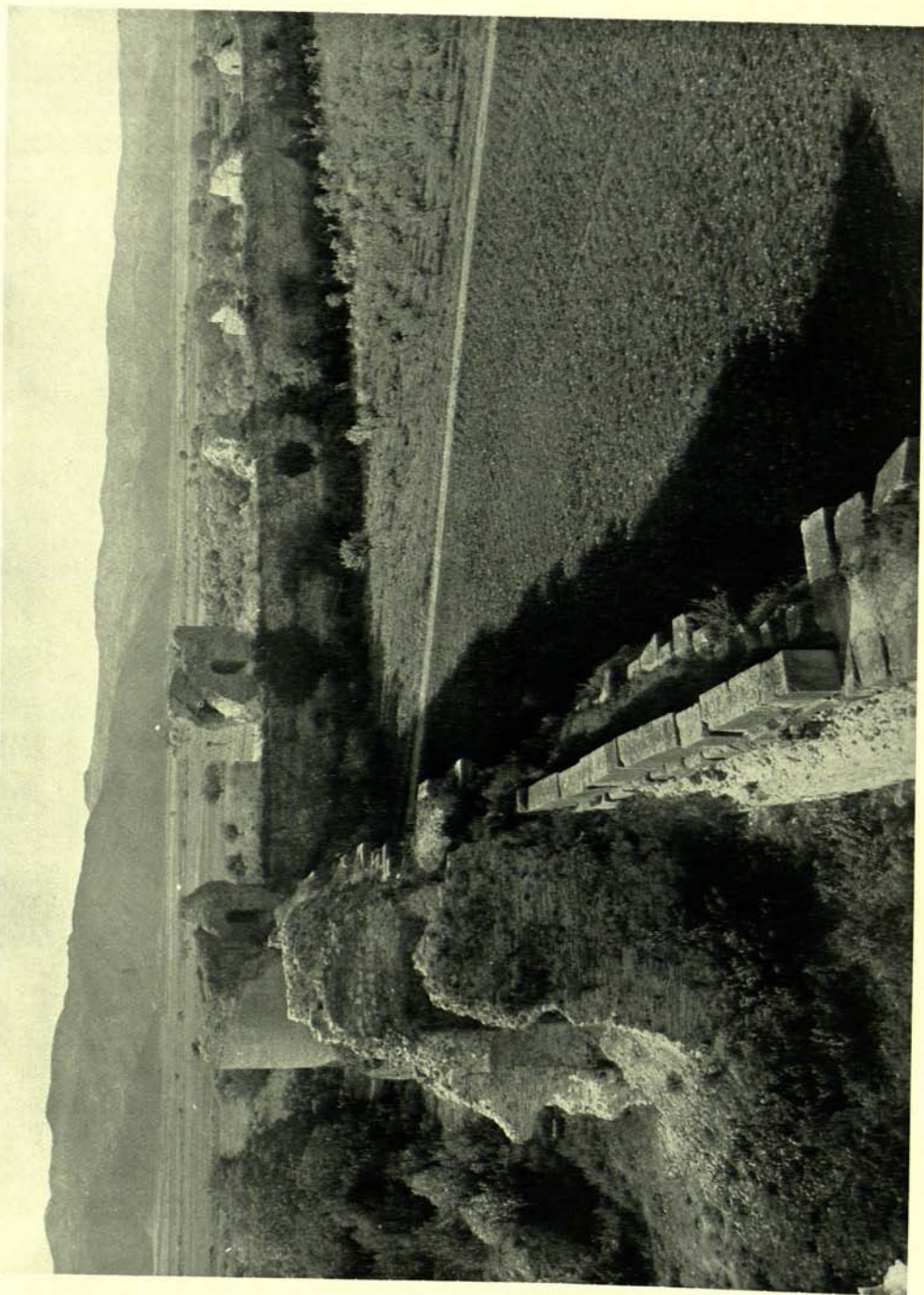


2. TOWER, STAMBUL GATE, NICAIA, SHOWING THE OUTER CASING OF BRICK. (See pp. 438-40)



TOWER 106, THE 'BABYLONIAN TOWER', NICAIA, ON THE SITE OF THE TOWER OF GONATAS. (See p. 442)

PLATE IV



TOWERS (15-22) OF THE MAIN WALL, NICAEA. (See p. 442)

THE CITY WALLS OF NICAËA

in the third century and passed from there to the east, Nicaea being the first example in the east known to us. The style of the fortifications also agrees with this dating: the towers are all semicircular, and are built into the wall, a method already obsolete when the land-walls of Constantinople were built. The height of the walls² is relatively low, as in other sites of the same period. Inner courts are not found in gateways of the Byzantine period; they disappear about the fourth century.³ The towers suffered greatly from earthquakes, while the walls at the worst formed large cracks (many such fissures can be seen in the curtains of Nicaea), and it is therefore not surprising that a quarter of all the towers has been completely destroyed, and of the rest only a few, and those precisely the latest built, are in good preservation. Those belonging to the first structure must already have been in a pitiful condition at the time of the great earthquake of 368. I venture the opinion that occasion was then taken, in the necessary reconstruction, to interpolate the towers of the second period between those of the first, which were somewhat wide apart, for they can hardly be distinguished from one another as regards the technique of the brickwork.

Evidence of further repairs is shown by four inscriptions of the Emperor Michael, one of which dates to the year 857-8. Unfortunately none of these inscriptions is now in its original position, but the stonework suggests that they may be assigned to towers 97-100, for these are exactly similar to the towers of the citadel of Ankara built by Michael. Probably the most catastrophic earthquake in later times was that of September 1065, when practically all the churches were destroyed and the walls badly damaged. It is doubtless to this date that we must assign the numerous repairs to the towers (PLATE II, 2), which show a quite peculiar technique. Alternate bricks in the outer surface have been set back somewhat and then plastered, so that they cannot be seen from the exterior, thus causing the abreuvoir between the visible bricks to be very wide (FIG. 3a).⁴ In 1081 the city fell into the power of one of the many Seljuk hordes which were originally in the pay of the Sultans of Rum and formed the garrison of Nicaea, but later

² Compare Trier (6.13 m.), Aosta (6.7 m.), Cologne (7.2 m.), Rome (about 8 m.)

³ Such courts may be seen at Pompeii, Nîmes, Aosta, Turin, Spalato (palace of Diocletian), and Rome (porta Ostiensis, porta Tiburtina; cf. I. A. Richmond, *The City Walls of Imperial Rome*, fig. 19, 33).

⁴ Similar technique is found in buildings that can be definitely dated to the 11th-12th centuries, such as the palace of the Mangana and the wall of Comnenus in Constantinople, and the somewhat later church of Pantocrator.

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refused allegiance. Sultan Sulaiman lived there for about ten years at this period. We cannot assume that these nomad warriors, at first only half-settled, made any additions to the buildings inside the city or to the walls. The building of the outer wall can certainly not be ascribed to them, as is generally done. Naturally the Byzantines made several attempts to win back this city, which was so important for them. Various surprise assaults were unsuccessful, until in 1097 the Crusaders invested it; but surrender was even then only attained by a complete blockade, for the primitive siege-engines of the Franks were useless against the sturdy walls. Only on the south did they damage the walls, near the Yenişehir gate, causing the destruction of the so-called tower of Gonatas. This tower stood at the southwest corner, roughly where tower 106 was later built. It was temporarily replaced by a sort of bastion (PLATE III), in which are the headstones of many Seljuk graves.

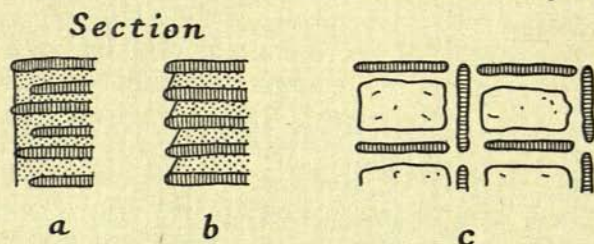


FIG. 3. SECTIONS OF TOWER WALLS, NICAEA

Nicaea's palmy days undoubtedly fell in the time of the Laskarids (1204-1261). During this period the outer wall was erected, mainly under Theodorus I, as we learn from a panegyric of the younger Theodorus, written before 1254. In consequence of the construction of this outer wall, the curtains must have been increased in height and a storey added to the towers. Apart from this, several towers of the main wall were rebuilt at this time, *e.g.* nos. 19, 20 (see PLATE IV), 23, 24, 106. These are recognized from the fact that the mortar is diagonally scraped off, giving the wall a saw-like profile (FIG. 3b).⁵ Together with this technique the method known as *Kastenwerk* is used (see FIG. 3c): both may be seen together in tower 106 (*kiz kulesi*), which is called the 'Babylonian tower' in the inscription of Theodorus Laskaris (PLATE III).

⁵ Walling of a similar type occurs considerably earlier, *e.g.* in the church of Clemens at Ankara (8th-9th centuries), in the Kalender camii at Constantinople (about 850) and in the Kilise camii (10th-11th centuries).

THE CITY WALLS OF NICAËA

But this St. Martin's summer of Nicaea did not last long. The city's prosperity was irretrievably undermined by the Turks, who paralysed all trade, until in the end the city could only be reached by the sea-route. But in 1330 its fate was finally sealed, and it fell an easy prey to Sultan Orkhan. The Emperor Andronicus was defeated while hastening to its defence, and had to withdraw without accomplishing his object. Sulaiman Pasha then became governor of İznik, as it was now called, but the seat of the Sanjak was soon transferred to the more conveniently placed İzmit. The importance of the city now began to wane, cut off as it was from trade-routes, and its burning by Timur in 1402 must have been its physical death-blow. Certainly the place regained some repute from the faience factory established there by the sultans, but its decay continued apace. Naturally no further attention was paid to the walls, and when Hans Dernschwam visited İznik about 1555 in the service of the Fuggers, he found the moat already filled in and many towers in ruins. Thirty years later Reinhold Lubenau reported that Sultan Selim had destroyed one of the gates. Of the 124 towers, a number had collapsed through age, but some were certainly destroyed deliberately. We are indebted to Ch. Texier for a detailed account of the condition of the place about 1833, and his plans and illustrations still remain the chief source of information concerning Nicaea and its walls.⁶

Time also, unperceived of man, does its gradual work of destruction on these ancient walls. But man, less merciful, in his quest for fine bricks or stone, deals wounds that are more gaping and more deadly. Grass and bushes and a tangle of creepers cover the rubble that fills the space between the walls. A timeless, mournful silence broods over it: rarely does a bird cry from the gray old walls, or a spangled snake writhe through the undergrowth. But still, as of old, the purple pomegranates bloom, the air is heavy with the scent of myrrh, cypresses rise gigantic to the azure sky, still the spring babbles beneath the shady canopy of planes; one thing cannot be taken from the ruined 'city of the holy fathers', either by time or by man—the lovely dress of immutable nature that none may destroy.

⁶ The outer wall is about 14 m. distant from the main wall; it is 1.6 m. in thickness, 3-4 m. high, and rather poorly built up of boulders and bricks. The gates alone are completely of brick. The towers are only defended from the platforms.

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(Trowlesworthy Warren), and 83 yards (Drizzlecombe, FIG. 2). The small row at Merivale, which appears to be complete, is only 46 yards long. There is a row, consisting of small, but closely set, stones, which starts with a circle on Staldon Moor, and ends with a small cairn on Green Hill, some $2\frac{1}{4}$ miles distant. Another on Butterdon Hill is over a mile long.

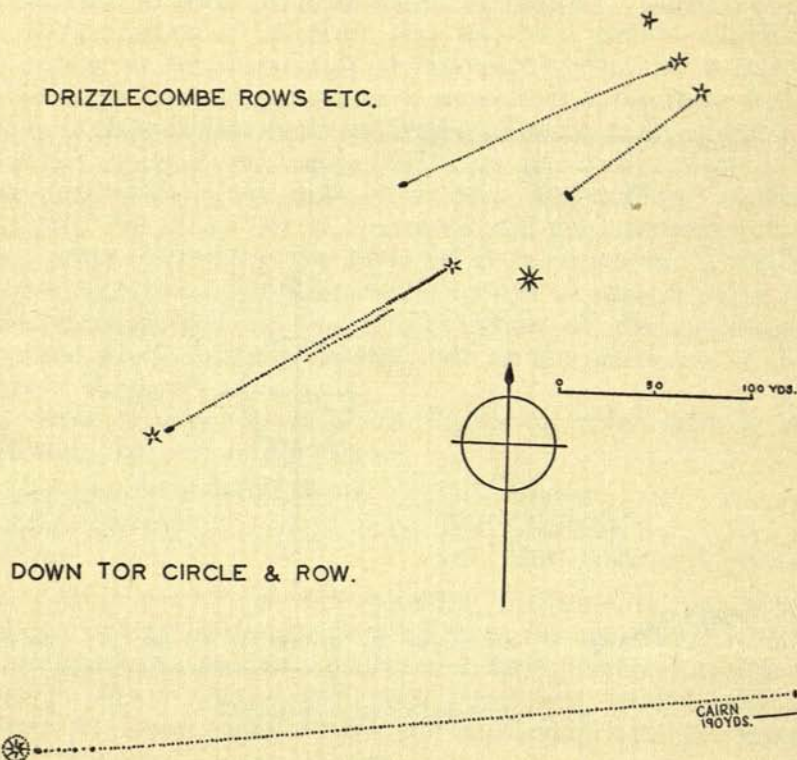


FIG. 2

The stone rows tend to run approximately east and west, as at Drizzlecombe, Merivale, Assycombe, Harter Tor, Trowlesworthy Warren 2, Down Tor (FIG. 2), Cosdon Beacon, Lakehead Hill, etc. In other cases the direction seems to be governed by the form of the ground. The Erme Valley group, including the Stall Moor and Staldon Moor—Green Hill examples, all run north and south, parallel to the river, but following the undulations of the Moor on either side. Those at Challacombe (N-S), Hurston Ridge (SW-NE), Ringmoor Down

BRONZE AGE STONE MONUMENTS OF DARTMOOR

and Trowlesworthy Warren 1 (NNE-SSW), also follow the slope of the ground.

It is impossible to do more than conjecture the purpose of the stone rows, though many theories have been put forward. It has been suggested that they were processional ways, but it is difficult to apply this interpretation to the many examples of single alignments. They may simply represent a connecting link between the circle and outlier which is such a common type in Scotland, or a trace of the passage found in the chambered tomb from which the Dartmoor type of monument is probably derived. Fergusson¹ considered that the Merivale rows were a memorial of some great battle, and represented two armies drawn up face to face, but this theory has found little favour, even as regards this specific instance. Worth² believed that the alignments marked the resting-place of some great chief, and that the number of stones represented the size of his retinue. The practice of setting up rows of stones is followed today on the island of Atchin, where they are used as symbols for ancestors in religious rites.³ On the same island a menhir, which replaces an original carved wooden image, is set up to represent the general ancestral spirit.

Alignments of carved stones are also found in Assam, where they are connected with a fertility cult and serve as vehicles for the souls of the dead.⁴

B, STONE CIRCLES

The great majority of the Dartmoor circles are peristalithic, though in most cases the enclosed cairn or barrow has been almost or completely denuded. Consequently, a circle of this nature is often found in association with an alignment. Some of these circles are very small; there is one on Ringmoor Down only 12 ft. in diameter. Others are multiple, as that on Shovel Down, one near the Stall Moor row (FIG. 3 and PLATE I), one on Lakehead Hill, and perhaps that at the end of the Assycombe Hill row. The best of these multiple peristalithic circles is that near Yellowmead Farm. It is a quadruple circle; the concentric rings have diameters of 62 ft., 48 ft., 38 ft., and 21 ft. respectively. None of the stones is over 4 ft. in height, but they are mostly

¹ *Rude Stone Monuments*, 51.

² *Proceedings Devon Association*, 1892, pp. 387 ff.

³ *Geographical Journ.*, October 1936, p. 344.

⁴ *ANTIQUITY*, September 1929, p. 324.

Bronze Age Stone Monuments of Dartmoor

by J. W. BRAILSFORD

THE lofty expanse of heather, bog and bare granite which forms the region under discussion in this paper, contains a numerous and in many ways unique group of prehistoric antiquities. Although Devonshire archaeologists have for many years been doing good work in this district, it has never, to the best of my knowledge, been comprehensively dealt with in the light of modern methods and experience. Consequently, the prehistory of Dartmoor still presents something of a mystery. After describing the material at our disposal, I shall here make a few tentative suggestions which seem to resolve some of the difficulties encountered in the interpretation of the archaeological evidence, and which may throw some light on the prehistory of the rest of southwest England.

The types of stone structure on Dartmoor which seem to belong to the Bronze Age are as follows :—

- | | |
|------------------------------|----------------------------|
| (A) Alignments or Stone Rows | (D) Cairns |
| (B) Stone Circles | (E) Menhirs |
| (C) Cists | (F) Hut-circles and pounds |

The last group are not strictly speaking monuments, but they unquestionably belong to the same complex as the sepulchral structures, and since they have yielded evidence for dating, their omission could hardly be justified. Other prehistoric structures, hardly referable to the Bronze Age, but which have some connexion with the matter in hand, are 'Dolmens' and 'Camps'.

A, ALIGNMENTS

Monuments of this type are very rare in Britain outside Dartmoor, where, however, about sixty known examples occur. They consist of single, double, or multiple rows of stones, usually, and probably originally always, in association with a burial. The cairn which usually marks the starting point of the alignment is most often more or less on the summit of a ridge, from which the row or rows run downhill. The stones nearest the beginning are usually larger than the average, and the first is sometimes a fine menhir as at Drizzlecombe, Langstone

BRONZE AGE STONE MONUMENTS OF DARTMOOR

Moor and other sites. The end of the alignment is almost invariably marked by a transverse 'blocking stone'. The intermediate stones have their long axes along the line of the row; sometimes the first as well as the last stone is placed transversely, as at Assycombe, Cosdon, Trowlesworthy Warren 2, and some other sites. One of the Drizzlecombe blocking stones is the highest menhir on the Moor, being 17 ft. 9 ins. long overall. The stones which form the body of the row may be

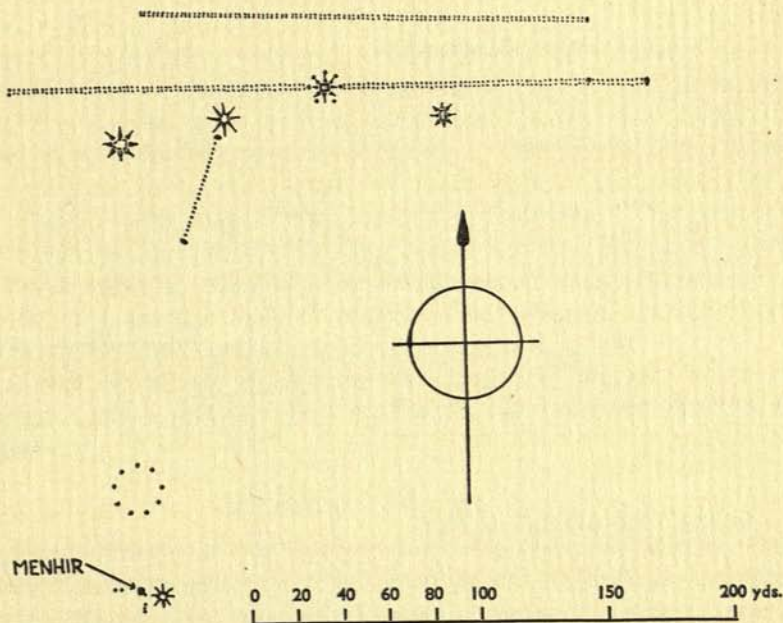


FIG. 1. STONE ROWS ETC. AT MERIVALE

only a few inches high, and are rarely over two or three feet, though many of those on Stall Moor are 6 ft. to 8 ft. 6 ins. high. Here the stones are spaced at intervals of 3-15 yards, but usually they are only about 5 ft. apart. There is great variety in the total length of these alignments. That connected with the large kist on Lakehead Hill is only 40 ft. long, but is probably incomplete. (FIG. 4). The most usual length is about 150 yards. Of those I have surveyed, nine are between 130 and 165 yards, 4 are between 400 and 413 yards, and the others, excepting the second row, also incomplete, on Lakehead Hill, are 266 yards (Merivale, FIG. 1), 62 yards (Harter Tor), 85 yards

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wide and set close together, especially in the innermost ring. On the west are traces of about 8 alignments.

Besides the peristalithic circle, another type is found on Dartmoor, as elsewhere in the Highland Zone of Britain, which seems to have no immediate sepulchral significance. This occurs at the 'Grey Wethers', a fine pair of circles, each about 100 ft. in diameter; on Langstone Moor, where there is a double circle, with several 'foreign' stones, and at Brisworthy, Sherberton, Cosdon, Huccaby, Fernworthy and Scorhill. These circles are all comparatively large; Langstone Moor, inner circle, 70 ft.; Brisworthy, 80 ft., Fernworthy, over 60 ft., Scorhill, 90 ft. They do not contain cairns, and except for the Fernworthy and possibly the Scorhill Circle, are not associated with alignments. It is difficult to discover either of the stone shapes recently defined by Piggott in any of the circles or stone rows.

None of the Dartmoor circles has either a bank or ditch, and they would therefore all seem to belong to the western group, derived from the peristalith of a megalithic tomb, and to have no connexion with the 'Henges'. As to whether the larger circles were used primarily as temples or burial places, it is hard to say. Ashes have been found in some, *e.g.* Fernworthy, Grey Wethers, Brisworthy, which led the excavators to believe that these circles were used as crematoria. On the other hand the charcoal may be cremated remains placed there by intent, in which case the purpose of the circles might be sepulchral, though the ashes might well represent a ritual deposit.

There are altogether over 90 known stone circles on Dartmoor, including both the above groups.

C, CISTS

There is no evidence to show that any of the Dartmoor cists were not originally covered by a barrow or cairn. A barrow usually contains only a single cist, but at Cosdon Beacon there is a cairn which contains a double cist, and traces of a third burial. A triple alignment leads from the cairn (FIG. 4). There is a considerable variation in the size of these structures; one from Langstone Moor, unusual in that it was paved, measured internally only 1 ft. 9 ins. by 1 ft. 1 in. by 1 ft. 2 ins. On the other hand the large cist at Merivale measures 6 ft. 6 ins. by 3 ft. 3 ins. by 2 ft., and has a capstone 10 ft. by 6 ft. 6 ins. The corresponding measurements for the principal cist on Lakehead Hill are 5 ft. 6 ins. by 3 ft. 3 ins. by 2 ft. 3½ ins., 7 ft. 5 ins., and for that

BRONZE AGE STONE MONUMENTS OF DARTMOOR

at Roundy Park 5 ft. by 4 ft. by 3 ft., 4 ft. 10 ins. by 4 ft. 4 ins. and 5 ft. by 2 ft. 6 ins.

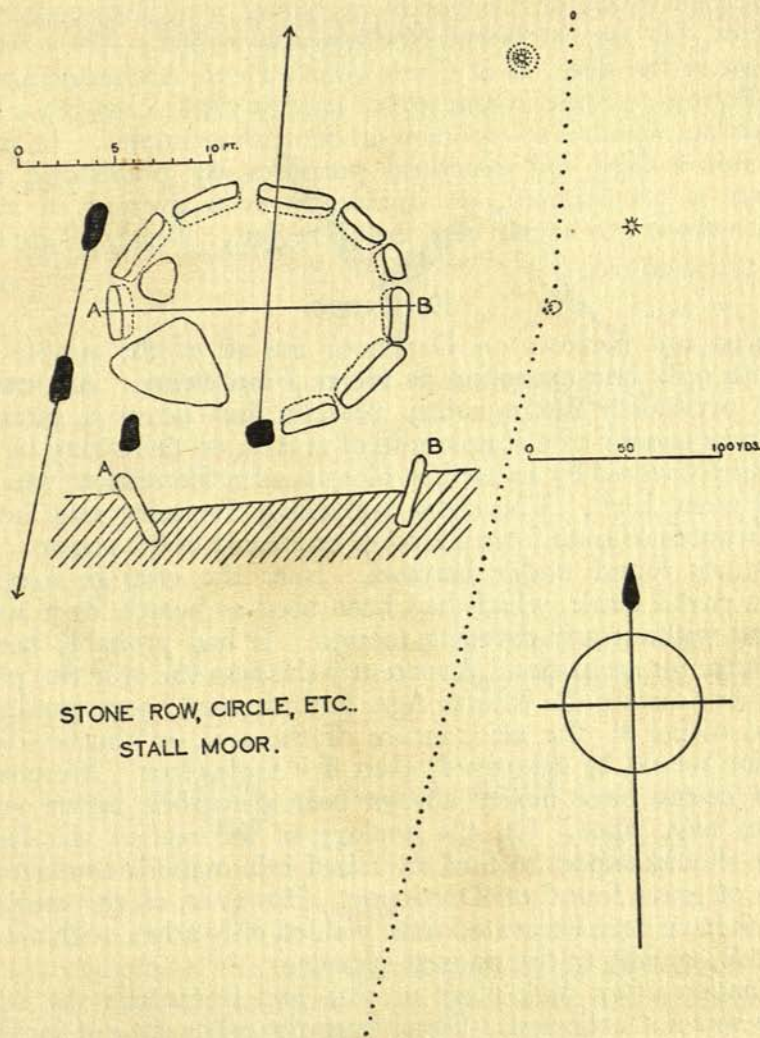


FIG. 3

These three have, however, all been restored, and Worth considers that they are now larger than in their original form. He gives the

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average internal measurements of over 60 Dartmoor cists as 3 ft. 1½ ins. by 1 ft. 11 ins. The average depth of 21 examples was 2 ft. 6 ins.⁵

The cists found on Dartmoor are almost invariably constructed of large slabs, but one at Great Nodden was walled. They sometimes have a pit in the floor, as at Great Gnat's Head, Archerton and Langcombe Bottom. None of the stones used in these cists bears any sort of decoration, which is so common on Scottish examples. In fact, none of the stones used for structural purposes by prehistoric man on Dartmoor is ornamented, or apparently even dressed in any way. There are about 110 known cists in this region. Nearly all are oriented NW-SE.

D, CAIRNS

Cairns and barrows on Dartmoor are all of the simple 'bowl' type, with only one exception as far as I am aware. An internal or external peristalith is frequently present, but never a ditch. The mound may consist of a simple pile of stones, or there may be a small central cairn covered by an earthen mound, as at Hameldon, where there is also a stone kerb. The slabs composing the cairn may be placed sloping inwards so as to form a kind of crude cist in the centre. Paving is sometimes found under barrows. Near the cists in Langcombe Bottom a paved circle, which had been used as hearth for a large fire, was found without any covering mound. It had probably been used as a platform for cremation. Apparently this was the only rite practised on Dartmoor during the Bronze Age, but inhumed bones would not be preserved owing to the acid nature of the soil, so that evidence of inhumation would be destroyed, even if it took place. Moreover, the cists and cairns have nearly always been disturbed before scientific excavation took place. On the analogy of the rest of the Highland Zone, we should expect to find crouched inhumations associated with the types of grave found on Dartmoor. However, all the undisturbed cists which have been excavated have yielded only ashes, with occasional grave goods, usually of the poorest types.⁶

Cremation often took place in situ, and frequently the whole of the ashes was not collected. Sometimes the ashes are not localized in any way. On the other hand they are often collected, and deposited in a pit under the mound. These pits are often nothing but shallow holes in the earth, filled with ashes and soil, but at Hemstone Rocks and elsewhere a coverstone was present, and an example at White

⁵ *PDA*, 1937, p. 82.

⁶ *PDA*, 1902, pp. 119 ff.

BRONZE AGE STONE MONUMENTS OF DARTMOOR

Down, Lydford, was paved. Sometimes the ashes are contained in, or accompanied by an urn, as at Hurston Ridge (inverted), and Pen Beacon. Beakers have been found in cists at Fernworthy, Langcombe, and Watern Down, and elsewhere fragments of urns have been discovered in them.

The turf and topsoil had been cut away under a cairn at Fernworthy,

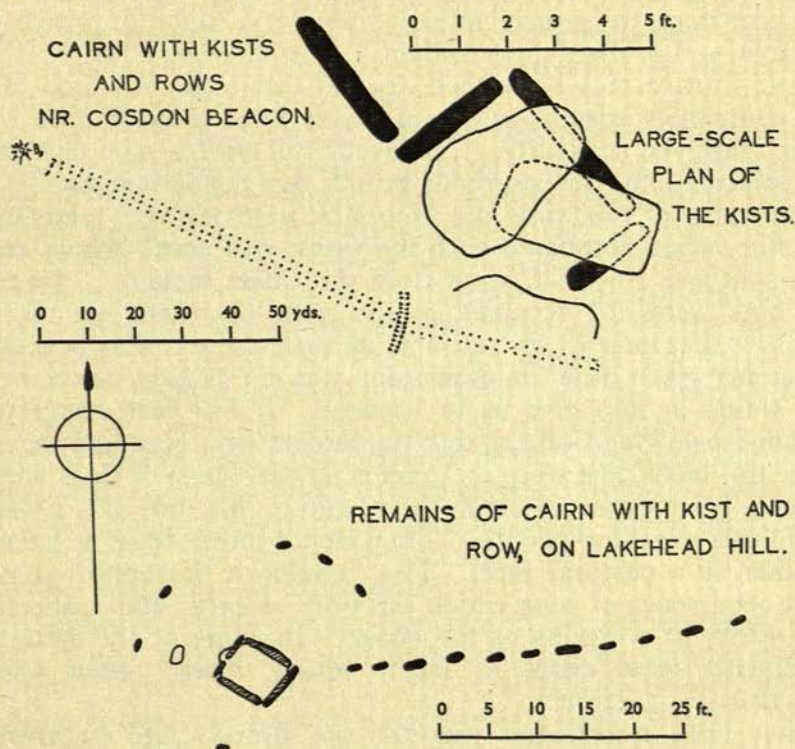


FIG. 4

so that the material of the cairn rested directly on the subsoil. In two cairns at Methemel the area inside the peristalith was lowered, and on this excavated surface was another ring of stones.⁷

E, MENHIRS

As mentioned above, these usually occur at one end of an alignment. There are some examples, however, which have never been

⁷ *PDA*, 1937, p. 147.

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connected with an alignment, circle, or any other form of monument, nor a burial. The finest of these is the 'Bairdown Man', near Devil Tor.

F, HUT-CIRCLES AND POUNDS

The density of the population which existed on Dartmoor during the Bronze Age is shown by the great number of settlements—about 100, in less than 300 square miles of territory, much of which is uninhabitable, and probably was so then. It is possible, however, that the climate of Europe may have been drier at that time, in which case the area of completely barren land would have been reduced, and the remainder improved in quality. The Moor still affords good pasture, and some justification for the enormous Bronze Age population may be found in the fact that at that time the Moorland pastures were really exceptionally fine, when compared with the forest and scrub which covered most of southern England, apart from the Chalk regions.⁸ Of course, all the huts were not occupied at the same time (though there can be no doubt that most of the settlements were more or less permanent), so that at any given time the population was not as large as the number of huts would at first give us to suppose. It has been suggested by Pilkington-Rogers⁹ and others, that the settlers who occupied these huts came for tin, but if this were so, practically the whole of their winnings must have been exported, and their culture has not the prosperity which follows a trading people. They would rather seem to have been predominantly a pastoral race. This conclusion is supported by the frequent occurrence of huts which can only be cattle-stalls, and by the extreme rarity of weapons of the chase. In some of the settlements the occupants grew crops in small square fields. (See Curwen, *ANTIQUITY* 1927, I, 281 ff.)

It has been questioned whether the Bronze Age occupants of Dartmoor formed a permanent population, or were not rather semi-nomad folk, who drove their herds on to the moor in summer, and retreated to the shelter of the surrounding valleys during the winter. Such a theory, however, does not seem compatible with the archaeological evidence. The extraordinary abundance of sepulchral monuments on the Moor must surely indicate a numerous settled population. I find it impossible to believe that the primitive inhabitants of the surrounding country carried their dead up on to the Moor, as into a vast cemetery, and there erected great memorials of a type of which there

⁸ *PDA*, 1894, p. 185.

⁹ *PDA*, 1932, p. 379.

BRONZE AGE STONE MONUMENTS OF DARTMOOR

are only three or four others in Southern England. If Dartmoor was a 'sacred area' it was probably thickly peopled with the living as well as the dead, like Salisbury Plain. However, there is little evidence for communication between the Moor and the fertile lowlands during the prehistoric period. The culture found on the Moor seems to be of a purely local type, developed by folk living on the Moor, and almost completely isolated from the rest of the world, at any rate in the later stages of the Bronze Age. I shall, in dealing with the 'Camps', give further evidence for the existence of a permanent population on the Moor at the end of the Bronze Age.

To return to the question whether the people who dwelt in the hut-circles were miners as well as farmers. Although evidence for the working of tin during the Bronze Age is fairly abundant in Cornwall,¹⁰ it does not seem to have been practised on Dartmoor before medieval times. However, the later tanners would have destroyed any traces of prehistoric working. Owing to the absence of conclusive evidence, and the scanty attention which has hitherto been paid to the matter, it is best to leave the question of whether tin-working was carried out on Dartmoor in prehistoric times until more work has been done on the subject. It has been suggested that the concentration of settlements in the river valleys shows the existence of tin-streaming, but it is more probable that it was due to the shelter afforded by such a situation, and to the water supply and means of communication which the river would give. Moreover, the density of settlement does not correspond with the relative abundance of tin deposits.

We come now to the actual dwellings of Bronze Age man, the hut-circles. Those at Grimspound may be taken as typical examples.¹¹ Their walls consist of a basis of large vertical slabs of rock, levelled up with small stones, and backed outside with a bank of turf. The doorways, which usually face southwest, are frequently protected from the wind by shelter-walls, and are paved; the jambs are 2 to 3 feet high. The floors are sometimes paved, or consist simply of the subsoil beaten hard. A paved dais was usually constructed on the right side of the entrance, which here is most commonly the higher or southern side of the hut. A flat stone in the centre of the floor formed a base for the roof-pole. A hearth and also an ash-filled 'cooking hole', occur in the huts which were occupied by the settlers themselves. The stones which had fallen from the walls of the Grimspound huts were only

¹⁰ Hencken, *Archaeology of Cornwall and Scilly*.

¹¹ PDA, 1894.

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sufficient to raise the sides to a height of 3 ft. or so, showing that the huts were roofed with thatch or turves. Some of the huts showed no traces of human occupation, and must have served for cattle-stalls, as the doorways were unusually wide in these examples. Others were doubtless store-houses. The huts at Grimspound range from 6 ft. 6 ins. to 15 ft. 6 ins. in diameter, and are on the average rather smaller than is usual.

Excavation has shown that in hut-circles near the border of the moor, where a comparatively plentiful supply of wood was available, the raised stone dais was replaced by one of logs, kept in place by upright stones. Larger pieces of wood were used for fuel on these sites than elsewhere.

Cooking was performed by means of 'pot-boilers' and 'cooking-holes'. ('Cooking-holes' with pots still in situ have been excavated at Legis Tor and Raddick Hill.¹² One at Legis Tor, which contained two 'pot-boilers', had been broken in antiquity, and mended with unbaked china-clay). At Harter Tor, slate covers have been found actually resting on the mouth of a pot. They also occurred at Grea Tor and Blackslade Down. Similar objects were found at Skara Brae, Orkney.¹³ The pots from Legis Tor and Raddick Hill were round-bottomed, but sherds of flat-bottomed pots have been found. Large circular stones, which seem to have been used to protect the apex of the roof, occur at Whiten Ridge, King's Oven, and Buttern Down. A modern example of this type, used in a similar fashion, was in 1896¹⁴ still in use on a building at Berry Down farm.

The fuel used in the Dartmoor huts consisted of stunted oak, alder and peat. Baring-Gould,¹⁵ describes the discovery of a hut containing charcoal, and numerous heat-cracked stones. He concludes that it was a primitive Turkish bath, in which water was poured over hot stones to produce a cloud of steam. A similar practice exists among the Lapps at the present day. At Shapley Common and Blackslade Down large huts were found, each connected with a small one which contained so much charcoal, and so many potsherds, that it is legitimate to assume it served the purpose of kitchen to the larger building.¹⁶

The prehistoric pounds of Dartmoor, which contain many of the hut-circles, consist of more or less circular enclosures, walled with dry, unhewn masonry. In size they vary from those which contain only

¹² PDA, 1896, pp. 174 ff.

¹³ V. G. Childe, *Prehistory of Scotland*, 180.

¹⁴ PDA, 1896, p. 180.

¹⁵ *A Book of Dartmoor*, 46.

¹⁶ PDA, 1895, p. 88; 1897, p. 148.

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two or three hut-circles, to the large type such as Grimspound (4 acres). That at Broadun is 12 acres in extent. Grimspound is unusual in having a double wall. Each part is built on the same principle as the hut walls, is 4 to 5 ft. high, and about 3 ft. wide. The space between is about 3 ft. wide, and may be reached from the interior of the pound. It was probably originally roofed over with beams and turf. It seems probable that this space was used for storage or even for habitation, and in the latter event, a parallel would be found in the occupied ditches of causewayed camps, if these really were occupied.

That the Dartmoor pounds were not in any way forts, is shown by their weak defences, simple entrances, and often indefensible positions, usually in a valley. That at Broadun is now without any water supply. They were rather enclosures for cattle, and a protection against prowling wild beasts. They even seem to be inadequate for this latter purpose, but it is probable that a hedge of thorn or furze boughs was erected along the walls, which would greatly increase their defensive power.

We now come to some groups of antiquities which cannot be assigned to the Bronze Age, or only doubtfully. They have nevertheless some connexion with the subject of this paper, and belong to the periods immediately preceding or following that under discussion. I shall start with the Dolmens.

Dolmens are the only truly megalithic monuments found on Dartmoor, and probably in every case are the remains of the chamber of a passage-grave. Four examples are known, all on the fringes of the moor. The finest is the 'Spinsters' Rock' near Drewsteignton, which, according to local tradition, was set up by three spinsters before breakfast. The coverstone of this monument measures 15 ft. by 10 ft., and rests on three uprights which are from $6\frac{1}{2}$ to 9 ft. high. It weighs about 16 tons. According to Polwhele and William Grey there was at one time a complex of circles and stone rows in association with the 'Spinsters' Rock', but their accounts are inconsistent, and of dubious accuracy. The only certain features seem to have been an avenue to the west of the dolmen and a pair of circles nearby.¹⁷ The monument stands in a ploughed field, and as far as I could discover, there is no trace of any barrow or other structure connected with it at the present day. Its present form is not original, since it has been 'restored'.

On Shovel Down are the remains of what may be another dolmen,

¹⁷ Ormerod, *Archaeological Journal*, 1872, p. 348; *Devon Notes & Queries*, xv, 124; *PDA*, 1930, p. 249.

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the 'Three Boys'. Only one stone is now left. This may at one time have been connected to the Fernworthy circle by an avenue.¹⁸

The third dolmen is at Coringdon Ball, near South Brent. Here the stones lie at the southern end of a long barrow about 65 yards long and 15 yards wide. Only one upright, 4 ft. 3 ins. high, is left standing, but two of the fallen stones measure about 12 ft. by 7 ft. (PLATES II, III). A short distance to the east is a set of badly despoiled alignments, apparently about eight rows running parallel in an east-west direction, and connected with a cairn on the west. The remains of another Dolmen are to be found on Cuckoo Ball.¹⁹

It will be seen that all the first three Dolmens seem to be connected with typical monuments of the Bronze Age complex, with which they appear to be, broadly speaking, contemporary, though probably belonging to the earliest phase.

The intimate connexion between the hut-circles and the sepulchral monuments of the Bronze Age complex may be emphasized here. Not only has excavation produced pottery and other finds of similar type from both cairns and huts, but at all the greatest alignments pounds and hut-circles are found in immediate association, and great monuments never occur in a district where these dwellings are rare.

The last class of prehistoric structures with which I shall deal here is that of the hill-forts, or camps, of which there are some 20 on the borders of the Moor. These are all of the type which has been shown to belong to the earlier part of the prehistoric Iron Age. None of these sites has been adequately excavated, but pottery similar to that from the Glastonbury Lake-Village has been found at Cranbrook Castle, together with a granite quern.²⁰ The earthworks at Holne Chase have yielded iron currency bars,²¹ and iron spearheads have been found close by.²² The camp at White Tor, which is the only one on the Moor proper, is also the one which has been most thoroughly investigated.²³ Owing to the different nature of the site, its construction is unlike the other forts, in that stone is used far more abundantly. It would perhaps be unwise to insist on its contemporaneity with the other hill-forts, though it seems to fit in the general system. The only finds made during the excavation were flint flakes, and some coarse sherds.

The hill-forts are in extremely well chosen positions. (See Ordnance

¹⁸ *PDA*, 1892, p. 391.

²⁰ *PDA*, 1901, p. 129.

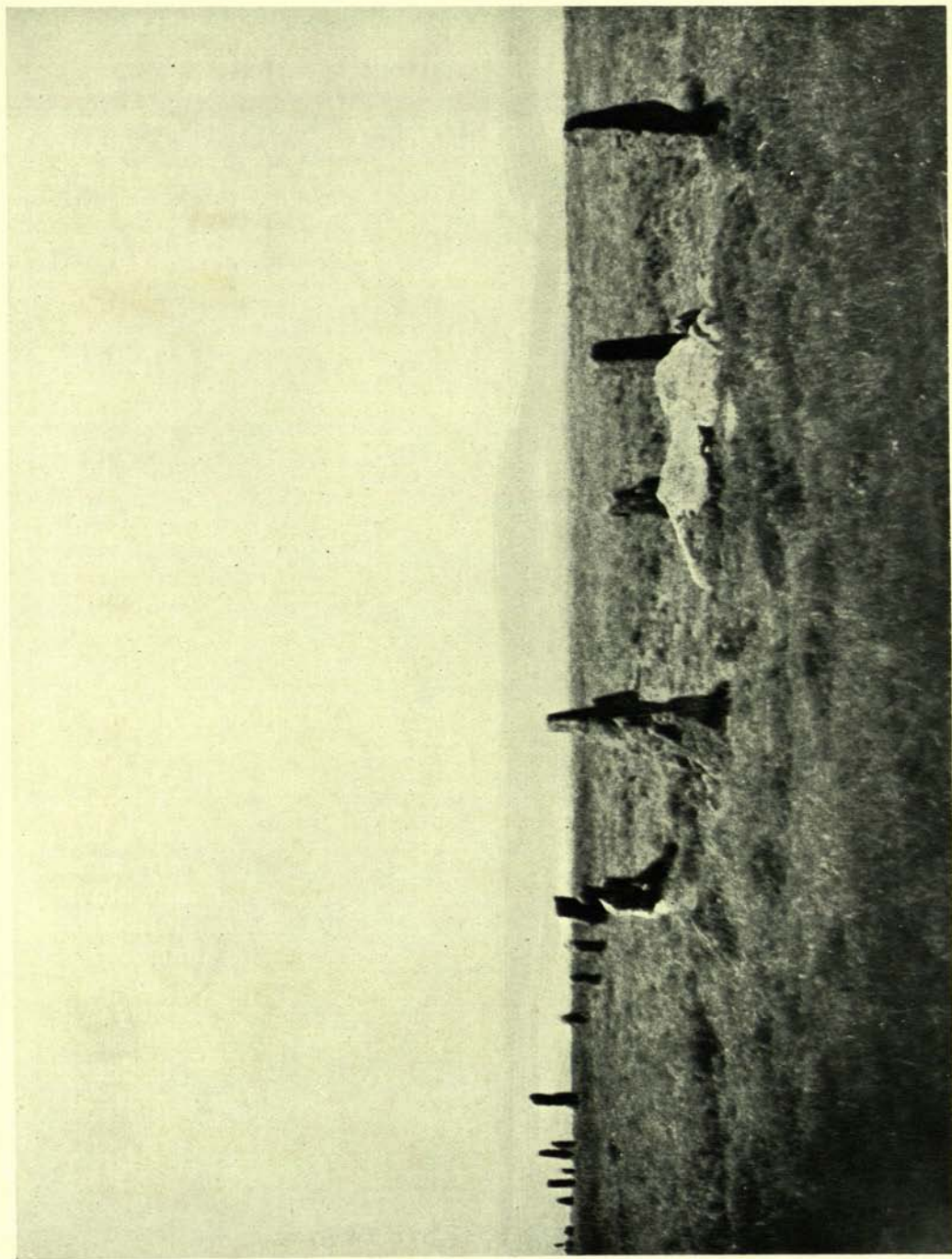
²² *V.C.H. Devonshire*, I, p. 597.

¹⁹ *PDA*, 1911, p. 96.

²¹ *PDA*, 1932, p. 386.

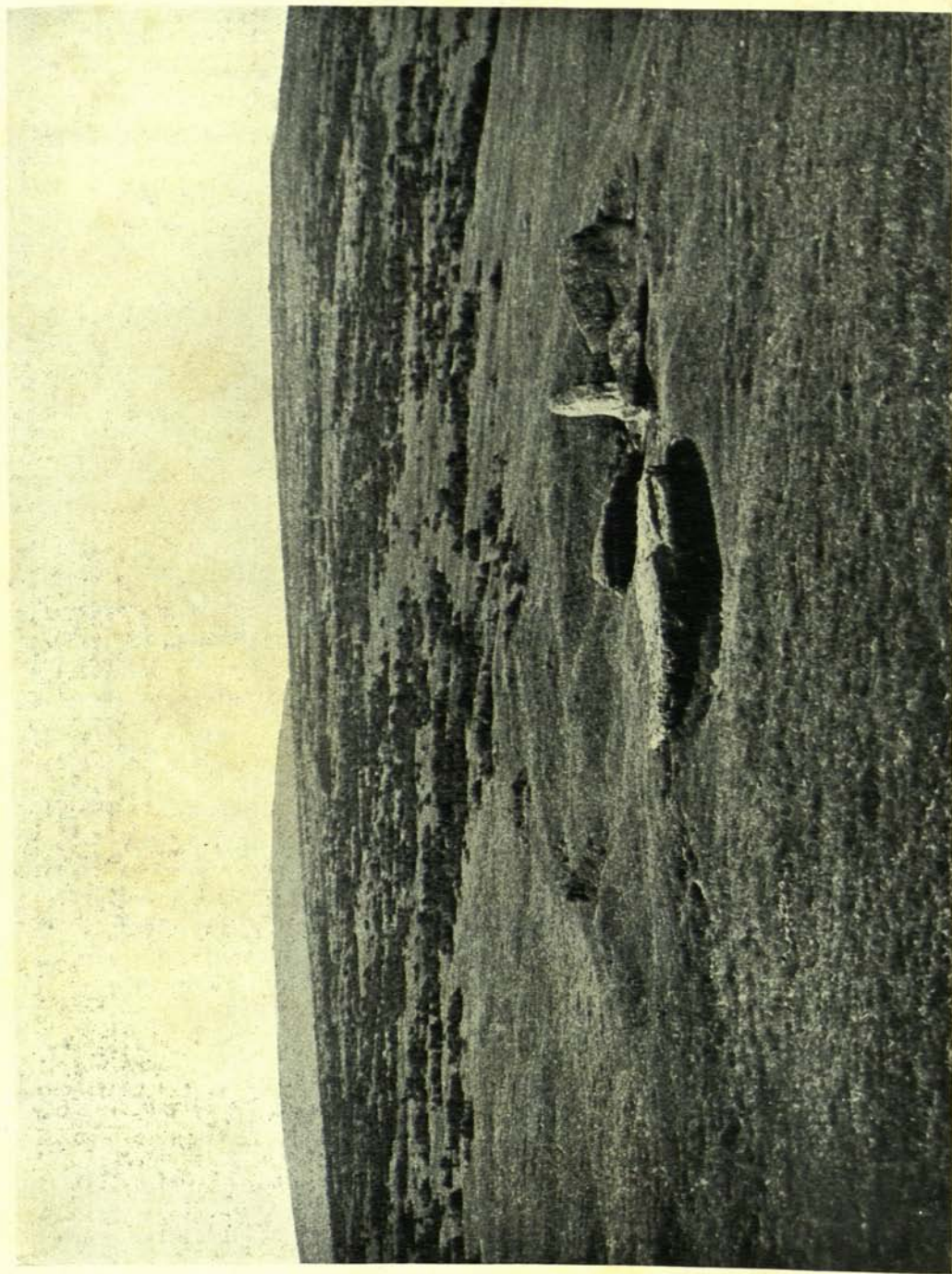
²³ *PDA*, 1899, p. 146.

PLATE I



STONE CIRCLES AND ROW ON STALL MOOR. (See p. 447)
Ph. J. W. Brailsford

PLATE II



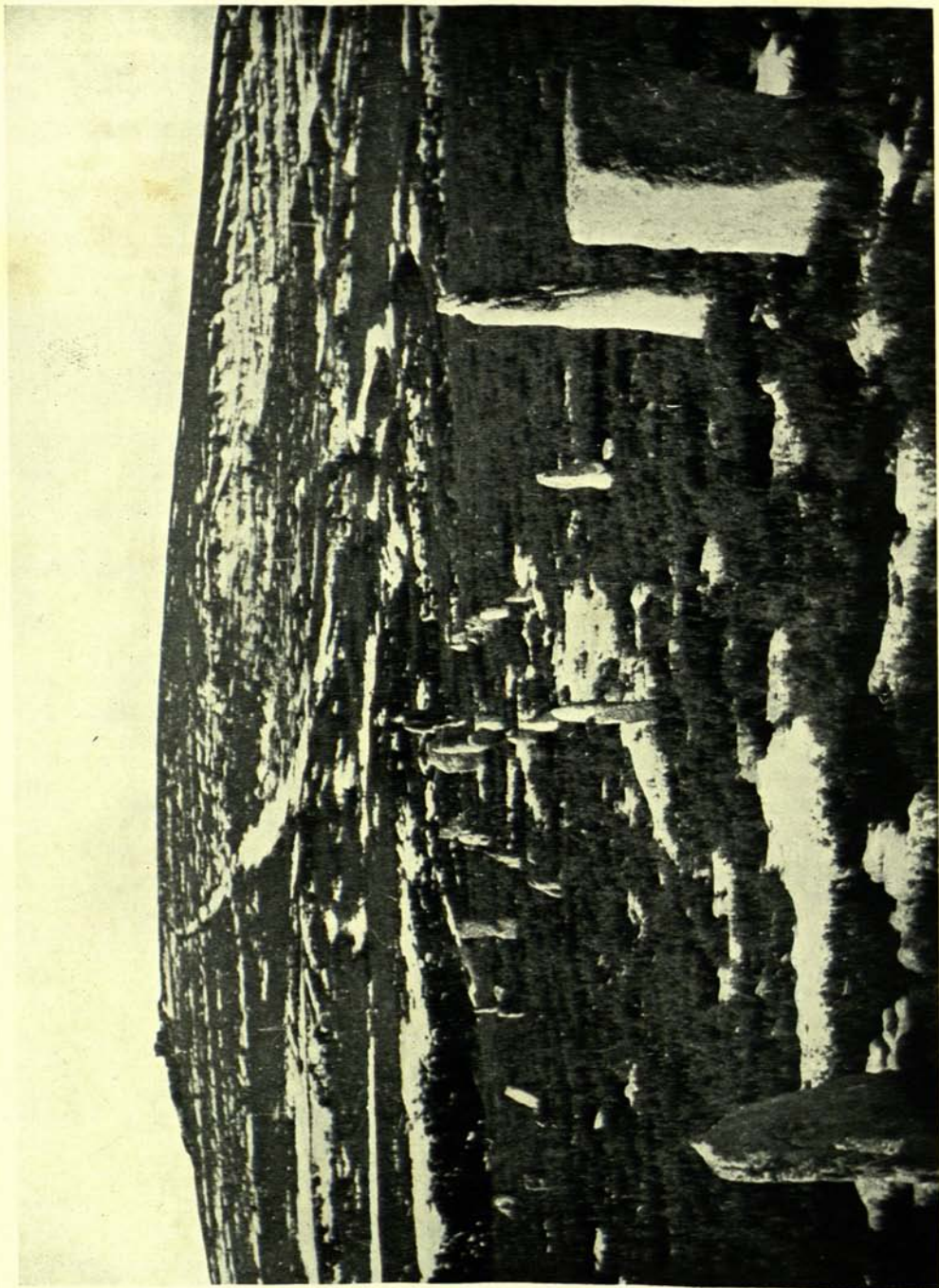
REMAINS OF CHAMBERED BARROW ON CORINGDON BALL, FROM THE SOUTH. (See p. 456)
Ph. J. W. Brailsford

PLATE III



REMAINS OF CHAMBERED BARROW ON CORINGDON BALL, FROM THE SOUTHEAST. (See p. 456)
Ph. J. W. Brailsford

PLATE IV



STONE ROWS ON CHALLACOMBE COMMON. (See p. 463)

Ph. J. W. Brailsford

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map.) They command most of the river-valleys, along which communication between the Moor and the lowlands must pass. They are often situated on a spur at the junction of two streams, so that they command both branches. Altogether they form a fortified frontier zone which completely encircles the Moor. None is found in the interior of the Moor; all are on the extreme edge of the plateau, except White Tor, and that is near the border. Now I think there can be little doubt that these forts were intended to check raiders moving along the river valleys. As far as is known, the Iron Age invaders never settled on the Moor, except possibly at White Tor. Therefore the belt of forts cannot have been to check inroads moving up the valleys, but must have been built by the men of the surrounding country, as a defence against the moor-men. This may be taken to prove the existence of a permanent native population on the Moor at the time of the Iron Age invasions.

We have now completed our survey of the major antiquities which prehistoric man has left on Dartmoor and its confines. I have described a remarkable complex of monuments, which I have attributed to the Bronze Age, without as yet giving the evidence for this dating. This evidence consists mostly of small finds from the settlements and cairns, and a summary only of their nature can be given owing to considerations of space.

A considerable number of hut-circles have been excavated during the last 50 years, and are described in the Proceedings of the Devon Association. Almost every site has yielded flint flakes, knives, scrapers, etc., also 'pot-boilers', and coarse potsherds. Most have produced grinding stones, and smooth 'rubbing stones'.

Other finds include a plano-convex knife, red ochre, slate covers, sling stones, spindle whorls, a whetstone. No metal objects have been recovered. Bone implements were probably in use, but none have been found.

The finds from cairns include arrowheads, a bead (faïence?), beakers, a bracer, bronze daggers, flint implements, grinding stone, hammer stone, horn button, flint knives, flint scrapers, bronze spearhead, fragments of urns.

The poverty of this list is largely due to the widespread, in fact almost universal, rifling of cairns that has gone on all over the Moor. This process was stimulated by Edward II, who made a grant for the opening of barrows in Devonshire. The making of this grant suggests that objects of some value had been found before that time.

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The scattered finds were bronze celts, a dug-out canoe, bronze ferrules, flint dagger, wooden idol, moulds, palstaves, polished celts, bronze spearheads, stone axe, stone adzes, a bronze sword.

Flint implements (arrow-heads, both barbed and tanged and leaf-shaped, scrapers, etc.) are common on the Moor.

The evidence of the small finds is supplemented by the affinities which we may find for the sepulchral monuments.

The Dartmoor complex, with the exception of the alignments, is almost identical with the great complex which existed all over the Highland Zone of Britain during the greater part of the Bronze Age, though the associated finds are somewhat different. The typical Dartmoor monument of a cairn, with or without cist, enclosed in a circle, is common throughout this area during the Early Bronze Age, and some Scottish examples belong to the Middle Bronze Age. Scottish hut-circles have been shown to belong to the Beaker period, though Childe,²⁴ considers that at any rate some of the Dartmoor examples belong to the Late Bronze Age, with analogies in Anglesey. Late Bronze Age cremations have been found at the foot of some of the Cornish menhirs.

As regards the alignments themselves, we can find very few datable parallels. A passage-grave on Lewis, which probably dates from the Early Bronze Age or a little earlier, is surrounded by a circle, and connected with eight alignments. The great alignments at Carnac in Brittany are probably to be referred to the earlier part of the Bronze Age, and an example from Caithness was associated with a cist burial containing a beaker.

Let us now consider such of the small finds as afford a more or less secure basis for dating. Much of the pottery is undatable, but has points in common with Bronze Age forms elsewhere. The three beakers form a more reliable criterion, and those from Watern Down and Langcombe Bottom are of late types. Other objects typical of the Beaker complex have also been found, including the bracer from Archerton,²⁵ the horn button from Fernworthy, the flint dagger from Belstone²⁶ and the bronze daggers from Fernworthy, Broadhall and Shavercombe Head. The Hameldon dagger²⁷ probably dates from the close of the Beaker period. The stone implement from Legis Tor is a

²⁴ *Bronze Age*, 160, 226.

²⁵ *PDA*, 1901, p. 135.

²⁶ *Procs. Devon Arch. Explor. Society*, II, 217.

²⁷ *PDA*, 1872, p. 554; Evans, 'Ancient Bronze Implements, etc.', p. 228, *Ant. Journ.*, 1937, XVII, 313.

BRONZE AGE STONE MONUMENTS OF DARTMOOR

type common in the Iberian Early Bronze Age. It is of spatulate form, with an incomplete perforation near the broad end. Barbed and tanged arrowheads are fairly common, as well as the more primitive leaf-shaped form, and stone axes of types which commonly occur elsewhere in the Early Bronze Age. It will be seen that a very large proportion of the material, and practically all that from the interior of the Moor, is datable to the Early Bronze Age. When we examine the finds dating from later periods, they are, with very few exceptions, limited to the borders. I have not been able to discover the type of the Moor Barton spearhead, but the hoards of palstaves from Chagford,²⁸ North Bovey and Bovey Tracey, and the isolated examples from Burleigh Wood and Drewsteignton²⁹ are probably of the Middle Bronze Age. The socketed celt from Bovey Heathfield is a Late Bronze Age type, it is of a long, narrow form, and rectangular section, and may be of French origin. The Bloodypool spearheads³⁰ are of the Late Bronze Age barbed type. I have been unable to find the character of the Greenaball sword,³¹ but it must belong to the Middle or Late Bronze Age. The ferrules from Bloodypool³² and Gawlor Bottom (the only reasonably certain find of this period in the interior of the Moor), are almost certainly of the Late Bronze Age. As I have said above, the greater part of the pottery from the cairns and hut-circles is undatable. It is mostly coarse red ware, usually with an expanded or everted rim. Ornament consists of finger-nail and cord impressions, sometimes forming a herring-bone pattern, and slashings. Horizontal grooves and 'festoon' ornament were found on sherds from Grea Tor.³³ 'Comb' ornament also occurs, as on sherds from Legis Tor. The pots are sometimes provided with large lugs or cordons.

There is no evidence whatever for any settlement on Dartmoor during the Iron Age, except for what may be a stray Belgic coin from Princetown. Apart from this, the whole period between the end of the Bronze Age and medieval times is represented only by two hoards of Roman coins, one from near Belstone and one from Furzeleigh, and a small fragment of what may be Saxon pottery from the Blowing-house in Swincombe Bottom. A few post-Roman inscriptions are also known, nearly all from the borders of the moor.

Neither is there any certain trace of human existence on the Moor

²⁸ Evans, *Ancient Bronze Implements*, p. 82.

³⁰ Evans, 338, 339, 465.

³² Evans, 339

²⁹ Evans, 86.

³¹ *PDA*, 1932, p. 387.

³³ *PDA*, 1897, 156.

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before the Early Bronze Age.* Yet during the latter period, man appears to have existed there in greater numbers than at any other time before or since, until at any rate medieval times. We must therefore postulate a fairly extensive invasion at the beginning of the Metal Age, possibly stimulated by climatic reasons.

Although there is evidence for the continued existence of a population on Dartmoor at the end of the Bronze Age, we find very few objects on the Moor which can be compared with finds of the Middle and Late Bronze Age elsewhere. It would seem that the unique culture which evolved during the Early Bronze Age persisted, while ever becoming poorer and more degenerate, long after more advanced conditions obtained elsewhere. It can hardly have been before the Iron Age invaders had become established that Dartmoor was depopulated, probably owing to the increasing humidity of the climate.

It now remains to consider the origin of these folk who peopled Dartmoor in the Early Bronze Age. The first step is to find from what direction they came. That they arrived from the North is improbable, as there are hardly any antiquities showing affinity with those which are characteristic of Dartmoor, between Okehampton and the Bristol Channel. This is in spite of the fact that Exmoor (though geologically different) is of the same physical nature as Dartmoor, and must have been equally attractive to the invaders. It is true that there used to be an alignment in the Exmoor district on Maddocks Down,³⁴ and that one is still in existence at Yelland, near the mouth of the Taw,³⁵ but these were probably due to a coastal settlement, parallel to but not directly connected with that of Dartmoor. Moreover, if the settlers had approached Dartmoor from the North, they would almost certainly have come up the valleys of the Torridge and Taw, and left abundant traces around the head-waters of these rivers. But this district, except for the Eastern part, which is near the Upper Teign, is, of all the regions of Dartmoor, that which shows the fewest traces of prehistoric occupation.

* Miss Barbara Shaw, of Wimborne, has recently discovered a microlithic site at Ringhill, near Postbridge. This consists of an occupation layer, containing charcoal and a hearth, and has yielded micro-burins, microliths, and cores of the type usually associated with a microlithic industry. Implements of later types have been found on the same site. I am indebted to Miss Shaw, for allowing me to print this hitherto unpublished information, and to Dr Clark, who first told me of the site.

³⁴ Westcote, *View of Devonshire*, 1630, p. 90; *V.C.H. Devonshire*, I, p. 370.

³⁵ *Proc. Devon A.E.S.* I, 201.

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At first sight a Western origin seems not unpalatable. The Bronze Age culture of Dartmoor has many points in common with that of the Cornish moorlands. However, the alignments, which form such an essential feature of the Dartmoor complex, are absent from the east Cornish moors, and only one, near St. Columb Major, is known from the whole county. The Cornish stone circles seem to be of a slightly different type to those on Dartmoor, as they are larger, frequently composed of dressed stones, and commonly have a central menhir. The circle known as the 'Stripples Stones' seems to be a 'Henge', with bank, ditch and well defined entrance. Another important difference is the almost complete absence of the Beaker culture in Cornwall, whereas Dartmoor seems to form something of a focus for it.³⁶ Conversely, the typical Cornish cinerary urns are not found on Dartmoor.

There seems to be sufficient disparity between the archaeological material of Dartmoor and Cornwall to obviate any possibility of the Bronze Age culture of the former originating in the latter region. At the same time the two areas seem to have features in common which are not apparent elsewhere in Britain, such as the practice of cremation throughout the Bronze Age. These must be explained by at any rate a partial community of origin for both cultures.

The headwaters of the rivers which flow from Dartmoor to the south and east present a marked contrast to the northwestern section. There is a high concentration of antiquities in the Erme Valley, on the Upper Plym and Walkham, between the East and West Dart, and round the sources of the South Teign, the Wallabrook and the Bovey. This distribution strongly suggests that the folk of the hut-circles came from the South. The evidence for a southern origin given by the distribution of settlement is supported by the fact that the only other area in Europe where alignments are at all common, besides Dartmoor, is the Carnac district in Brittany. Stone rows, besides those already quoted, do, it is true, occur in Caithness, possibly near Shap,³⁷ and at a few other sites in the British Isles; but these are probably all sporadic examples derived from the same source as those on Dartmoor, *i.e.* Brittany. The two examples named above are very similar to the Dartmoor rows; that at Shap appears to have been connected with sepulchral remains, while one in Caithness,³⁸ was

³⁶ Fox, *Personality of Britain*, Pl. II.

³⁷ *Rude Stone Monuments*, p. 129; Camden's 'Britannia' (ed. Gough), III, p. 401.

³⁸ *Rude Stone Monuments*, 529.

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associated with a cist containing a cremation. The use of cremation from the beginning of the Bronze Age would also suggest Breton influence, though not necessarily direct; a Breton type which does, however, also occur in southeast England, is the Archerton bracer. The stone implement from Legis Tor has affinities with Iberia. The Hameldon dagger and its pommel have partial parallels in Brittany, but Piggott considers that this type, ornamented with small gold pins, was manufactured in Wessex.³⁹ The Hameldon cairn, with stone kerb and menhir on the summit, may have Breton affinities, and two barrows of similar type have recently been excavated in Glamorgan. That at Breach Farm contained objects of Breton, or related Wessex, origin.⁴⁰

So far we have seen that the Dartmoor Bronze Age culture is of a general Western type, though the presence of alignments seems to give evidence of direct contacts with Brittany.

When we come to consider the beakers, we find evidence of an element coming from southeast England. There are at least four of these vessels from Dartmoor, a remarkable number in view of their rarity in the Cornish peninsula, and the poverty of the Dartmoor Bronze Age. Moreover in view of the widespread rifling of cairns this number may be only a fraction of the original total. The presence of all these beakers can hardly be due to chance contacts. They were all found near the headwaters of rivers flowing to the south or east; and do seem to represent a definite coastal contact, either ethnic or by trade, with the Early Bronze Age of the rest of southern England. The horn button from Fernworthy, and the Belstone flint dagger, support the evidence of the beakers. The fact that at least three of these beakers were found with cremations is against the hypothesis of an actual westward migration of the beaker folk, though perhaps at the time when the settlement of Dartmoor took place, the older custom of inhumation was losing its hold.

The most we can say at present is that two elements seem to have combined to form the Bronze Age of Dartmoor. One came direct overseas from Brittany, and the other, possibly carrying indirect Breton influence, was carried along the coast and up the river valleys from southeastern England. The former movement may be regarded as parallel to those which Piggott has recently shown to have taken place between Brittany and Wessex in the Early Bronze Age.³⁹

³⁹ Piggott, *Proc. Prehistoric Soc.* New ser., 1938, IV, 52 ff.

⁴⁰ For details and further parallels see P.P.S. New ser., 1938, IV, 107. See also 1937, III, 457.

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The reader is advised to consult the Ordnance Survey 'Tourist Map of Dartmoor', scale 1 inch to mile (paper, flat, 2s; mounted and folded, 3s; mounted and folded in sections, 4s 6d). The archaeology of this area has recently been revised, and the map redrawn (5th edition). The antiquities on Dartmoor are so thick on the ground that a text-map is out of the question here. For special sites and areas the 6-inch maps should be consulted; index-maps and information can be obtained from the Director General, Ordnance Survey Office, Southampton (So'ton 5181).

In conclusion, I should like to record my thanks to Mr Stuart Piggott for much useful information and advice, and to Mr M. J. Kidner, whose long-suffering assistance in the field has been invaluable.

NOTE

The affinity between the alignments of Dartmoor and those of Carnac is shown, apart from their obvious general resemblance, by a specific feature, which occurs in the Challacombe rows (FIG. 5 and PLATE IV). This is the large transverse menhir, which is not terminal, but inserted in the row, marking the position of a structure at the side. Similar examples occur in the Kermario alignments, near Carnac.⁴¹

STONE ROWS, ETC; CHALLACOMBE.

The extremities of the rows, especially at the southern end, are largely destroyed, and are here restored conjecturally.

0 10 20 30 40

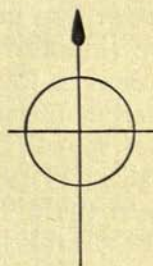


FIG. 5

⁴¹ Miln, *Archaeological Researches at Carnac, etc.*, 1881, pp. 59-60, 71.

The Modern Pottery Trade in the Aegean

by STANLEY CASSON

ARCHAEOLOGISTS in general and students of ceramics in particular largely live in an ancient world of their own creation. They have built up the background of the period they study by means of the material objects available to them, and they have filled in the gaps largely by hypothesis, analogy and guesswork. This, after all, is part of the game. They have decided that they have no alternative. Rarely and with caution they draw comparisons between living and dead primitive cultures. Usually they draw back in alarm, for aboriginal Australians and Bushmen have the irritating habit of not always coming up to the desired level of similarity when comparisons are made between them and men of Neolithic or earlier cultures. And so the archaeologists are driven in on themselves. Perhaps it is just as well.

But since archaeologists are by nature and origin academic, except for a few rare spirits like Boucher de Perthes or Benjamin Harrison, they tend to create from the material archaeological remains which they study a world which, here and there, may be ever so little out of touch with reality. In the study of ceramics this is especially evident. The survival of pots and potsherds on ancient sites, and the organization of their study almost into a science, has given an importance to pottery which far exceeds that given to any other material. For pottery is the material which illustrates the life and history of an ordinary simple community. And so the great quasi-science of Ceramic has been built up. The branches of this study are numerous. There are those who study the technique of pottery manufacture, one of the most instructive and useful of all. There is the comparative study of pottery by which conclusions as to the diffusion of cultures and the interchange of commodities can be established. There is the study of pottery as an art, that is to say as the deliberate creation by the potter of objects of beauty as well as of use, a rare event in the history of ceramic. There is the study of the morphology and the design of pottery and that of the style of the decoration. There is even the study of the derivation of pottery shapes from shapes in other material, the dependence of ceramic on

THE MODERN POTTERY TRADE IN THE AEGEAN

wares originally made of stone, leather, basket-ware or wood. But one aspect of ceramic seems to me to have received slight attention. I know of almost no literature or research which deals with the *economic* aspect of pot-making. What answers for instance can be given to the questions :—

How was the making of pottery at certain periods and in certain places organized ?

When pottery has ceased to be merely one of many domestic crafts carried on by the family unit, what types of people control its manufacture and output ?

Once the archaeologist has identified a definite *fabric*, which has a reputation for excellence that reaches beyond its place of manufacture, what does he know of the methods of its distribution, manufacture, sale and export ?

Once pottery has become an object of commerce as such and is not manufactured for home consumption only—once, that is to say, there has been made a surplus of pots—by what streams of commerce does it find its way into the hands of alien customers ?

Here, I think, most archaeologists will agree is a group of questions which have only on very rare occasions been answered.

Kiln-evidence, which is notoriously rare, tells us a good deal, when it is available, as to the actual processes of firing, all useful technical knowledge. But kiln-evidence does not tell us much about the primary processes of manufacture, and almost nothing about the organization requisite for making and selling.

When pottery was made was it made by individuals working in their own homes or by organizations which might be called factories, where the division of labour was properly established ?

Fabrics, as such, by their distribution, tell us much about the streams of general commerce, but we have almost no knowledge as to the detailed manner in which pottery was conveyed, on land and on sea. Slowly, with some well-known fabrics, like the various 'Samian' wares, or like Attic Black- and Red-figure ware, we can reconstruct in some detail the operations of the factories and studios that produced them. Proto-Corinthian and Corinthian wares are wares about which we know almost everything there is to know, except the manner of their distribution and the organizations that produced them.

From our wide ignorance we are often led to make assumptions which seem so obvious that their truth is never challenged. Thus if a

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type of pottery known to have been made in one place is found in smaller quantities in another it is generally assumed that it was exported ready made from the former to the latter. This is assumption pure and simple. If a type of pottery made of a peculiar and distinctive clay is found in one place in large quantities, its occurrence at another place in smaller quantities is assumed to be due to exportation of the pottery ready made. Another assumption.

No doubt many, if not all these assumptions are perfectly correct. But it would be wiser to treat them as assumptions. For they are so often stated as proved facts, which none of them is.

Hints of the danger of translating assumptions into facts has recently been brought home to me by an examination, all too cursory, of the way in which modern pottery fabrics are made and distributed in the Aegean and the Levant.

The economic condition of peasant and small-town life in the Aegean, particularly among the islands, hardly differs in simplicity or complexity from what it was either in the Bronze Age or in Classical Greek times. The average islander and coast-dweller still lives on the same food, and in similar houses to those of his ancestors. Modern communications have left him relatively unaffected. Local steamships bring newspapers, bulk merchandise, machinery, building material and visitors. But the main objects of food and necessity are still conveyed by the many thousands of small sailing vessels, caiques, barques, brigs and even small boats handled by two or three men. The numerous harbours of the Greek and Turkish coasts and islands are still considered as places for the sale and purchase of commodities as well as for the docking of ships. In this they contrast completely with the harbours of countries like France, Italy, Spain and Western Europe as a whole, where harbours are never also markets. In the Aegean islands every harbour is a market.

Among the many commodities which are dealt with in this age-old manner pottery is one of the most prominent. Its bulk and weight, which contrast with the very low prices paid for it, by comparison with other merchandise, make it difficult for the manufacturers to send it by steamship, because of the high freightage charges. It therefore falls to the fleets of small sailing ships, for the most part, to convey pottery from the maker to the buyer. In any island harbour the visitor will almost always see at least one caique moored with its bows or stern to the quay, and on the quay spread out invitingly the various pottery wares which the ship has come to sell retail to the inhabitants. It is

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always a pleasant sight and an interesting one. Here at any rate, is a possible answer to one of my questions. Where the economy and mode of life has changed so little it seems at least probable that methods of sale have altered little. I see no reason why one cannot make a fairly safe assumption to the effect that ancient fabrics in the Bronze Age and Classical Greece were distributed and sold in the same way. Whether the same assumption can be made for regions outside the Aegean and Levant is another matter. In any case it would be less safe to assume. Quayside sales are an essential part of the sale of modern Greek fabrics. This is certain.

Further examination as to the method of manufacture of modern fabrics leads to quite surprising results. But the paucity of research is astonishing. Almost nothing has been done to ascertain the way in which the modern Greek potter works. I know of only two places where any results have been obtained. In Cyprus, where life pursues a daily economy which is closer to that of antiquity than in almost any other place in the Eastern Mediterranean, the makers of pottery form a specialized class in the community. The vessels they make follow more closely the forms of the Bronze Age than in any other Greek region (PLATE I). It is certain that an ancient ceramic tradition both in shape and in methods of manufacture and distribution is strong in the island. The commonest water-vessel, shown here in the plate, has the typical gourd-form of the usual Cypriot Bronze Age pottery. Its clay and its limited decoration round the neck are also Bronze Age in type. The vessel is made to stand on soft earth, or else in a frame, and so has no base. The majority of the Bronze Age wares resemble it in this.

Cypriot potters are not all town and village dwellers, devoted to a sedentary occupation. Some of them are itinerant and nomadic. They will set out with their donkeys and with a load of pots for sale. They will also convey with them a consignment of wet clay. Arrived in a village they will sell pots ready made and also make pottery to commission. They will even mend damaged pots and partly remake others. They work on the spot and then move on. The transport of clay from the region where it is found to another where it is not is a fact of prime importance to archaeologists. I prefer to state the fact rather than to point to its implications.

Potters of this kind in Cyprus form a specialized type of worker and differ from the sedentary potter of the small towns and villages. I am indebted to Mr A. C. Indianos of Nicosia for this information.

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For Crete a very valuable article¹ by the late Stephanos Xanthoudides gives us the most detailed particulars. He describes in particular the organization of the modern potters of the village of Thrapsanos. These potters form a band in which each member has his own specialized job, though there are other jobs in which several men take part, as in the kneading of clay. Each member of the band has his own donkey and the band as a whole begins its travels about the middle of May and returns in the first ten days of August. Then they revert to their ordinary agricultural occupations for the rest of the year, using the money they have gained by their side-line in pot-making. But they are sedentary as well as nomadic, for they have their own kilns at Thrapsanos where they make pots no doubt for themselves and the immediate neighbourhood. M. Xanthoudides shows in great detail and with many acute observations how the manner in which they make *pithoi* is identical with that in which the Bronze Age Minoan *pithoi* were made. This is not relevant to the matters which I am now discussing except in so far as it illustrates how persistent and long-standing are ceramic traditions in the Aegean. The discovery of certain discs of Minoan fabric first suggested to M. Xanthoudides a comparison with modern discs of the same kind. He was thus able to find out that the Minoan discs were an essential part of a form of slow-wheel for the making of *pithoi*. This was clearly a most valuable discovery. He illustrates his article with illuminating photographs.

In these Cretan bands the maker of *pithoi* is the master-potter of the group. For while the group makes pottery of all kinds, the making of *pithoi* is considered the branch of the pot-maker's art calling for the highest skill. This master potter, who is called the μάστορας or πρωτομάστορας, makes about ten *pithoi* in a day. The master potter, when at this work, is also called the πιθαράς. His assistant who feeds his wheel with the clay is called the τροχάρις. His second-in-command is called the στοτομάστορας. He makes vessels of other types. The official name of the master potter appears to be of Byzantine origin, that of his second-in-command to be Venetian, or partly Venetian. This testifies to a certain antiquity even in the technical terminology, though the technique is vastly older.

These small gleanings of facts concern the manufacture of the simpler and more primitive wares for peasants and villagers only. Into this world of self-supporting ceramists there intrudes the wider world

¹ *Essays in Aegean Archaeology* (Oxford, 1927), 'Some Minoan potter's wheel discs', p. III.

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of organized manufacture, which uses the fleet of small ships for its commerce, and yet still retains its antique character. The self-sufficient trade in local wares in Crete and Cyprus corresponds more to the manner of the Bronze Age of Greece before the mass-production period heralded by the making of Mycenaean wares. But the wider trade by sea of the main modern fabrics resembles more closely either the Late Bronze Age of 1400-1200 B.C. or the full Classical Greek period.

The main centres of modern production, as far as I can ascertain the facts, are as follows.

Chalkis in Euboea is today the greatest exporter of general ornamental pottery in Greece. Chalcidian wares are all alike. They have the common quality of being the very decadent descendants of the latest of the Byzantine wares. The bowls and jugs of Byzantine manufacture, made as late as the 17th and 18th century in Greek centres, almost all favour a poor but vivid green glaze as the only decoration. The cruder the ware the more the glaze is splashed and run over the surface without any design or decoration properly so called. The purpose of this glaze is to make the pottery non-porous. The secrets, if such they can be called, of the craft appear to have survived mainly in Chalkis. In form the vessels made cover an enormous field. Tall one-handled jugs for water with flat bases, plates, cups, fruit-stands, and a profusion of oddments like salt-cellars and coffee cups are turned out at Chalkis. Pleasant bowls and rectangular palm-pots are also interesting, for in some cases the glaze is pink or red and upon it is put in *appliqué* from moulds, small flowers, to relieve the otherwise plain field. These vessels appear to be inspired by that now almost extinct fashion of design commonly seen in Nauplia and Athens, which is derivative from that phase of Greek art which can best be described as the 'Victorian-Bavarian', of the time of King Otto. One can still see its remnants in certain side-streets in Athens and more extensively in Nauplia, where a flavour of Victorian flower-urns and pilasters still pervades house and garden. This Chalcidian ware is certainly dependent on that particular phase of art.

The wares of Chalkis, mostly with the green glaze, are seen on every quay-side and in the shelves of every café and grocer's shop in Greece. The factories have an enormous output. But the wares are undistinguished and unattractive. Nevertheless they have a vogue.

Samos seems to me to be one of the more interesting centres. Its pottery has a limited distribution among the islands. On the quayside and in the pottery shops at Rhodes, while the bulk of the wares were

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Chalcidian, there was also much from Samos. The best Samian wares are glazed, but do not follow any Byzantine tradition. One fine cup (PLATE II, 1), or drinking-mug, shows an excellent form and attractive design. The clay, as in all Samian wares, is compact and red, but the glaze-slip is a fine white and the rough design is in blue and rose. It is a decadent form of the classical *guilloche*. A plate with the same white slip overlaid with a rough design in tomato red (PLATE III, 1) is a standard ware of Samos. Less usual are the delightful yaourti-dishes (PLATE III, 2) made of firm dull-red paste, glazed over with a deep tomato red glaze and overpainted in white slip with the name ΣΑΜΟΣ, the name of the chief town of Samos, Vathy—ΒΑΘΥ, and the letters Μ Β which I take to be the maker's initials. These dishes are standard wares for use by Samians and in no sense made for export or for tourists. The jug (PLATE III, 2, right) is of the same colour and type as the yaourti-dish, and therefore probably of Samian origin. It was bought in Athens.

Samian wares are among the best of the island wares and the most durable. They constitute a strong rival to Chalcidian. I have bought Samian wares in Santorin and I think they are obtainable at Melos.

Another centre of production is the island of Siphnos. The principal pottery-making centre at Siphnos is at a place called Platyalos on the south-east corner of the island. Here are all the kilns and a community of potters but no village properly so-called. There is a safe anchorage for caiques at this place. Here a dark unglazed clay is used to make very simple peasant vessels. It has a small distribution and I have only succeeded in finding it on sale at Santorin. Siphnos specializes in those necessary and interesting vessels the chafing dish or incense-burner (for it can be used for either purpose), and in the ordinary casserole for cooking. The example of a chafing dish shown here (PLATE IV, 2) is of dull red clay, built in the manner of Byzantine vessels of the same kind (of which some splendid examples have recently been found by the American excavators in the Agora at Athens).² The vessel has a hollow stem above which is the inner dish, pierced with slits. The stem has had cut out of it a triangular hole for the insertion of charcoal. The heat from the charcoal, generated by the draught, heats or burns what is placed in the receptacle above it. I am informed that Siphnian potters, like Cypriots, are nomadic. Being islanders they carry out their ceramic visitations by sea, and load into their ships

² Hesperia, vol. VII, no. 3, 1938, p. 457, fig. 19 B.1. and fig. 22.

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not only their wares but also their clay, in order to manufacture to commission.³

By far the most interesting centre of production is the island of Skyros in the northern Sporades. Here a very refined tradition of ceramic has existed for several centuries. The vessels made are mainly jugs, bowls and drinking mugs. The latter, of a barrel-shape (PLATE II, 2), is one of the best Skyriot forms. All the wares, without exception, are unglazed and porous. The most remarkable thing about them is their design. It consists of a pattern in thick dead white slip made of chalk, which is painted on by brush with great care. The designs are mainly geometric and recall many designs of the Greek Geometric period. But the white slip is of bad quality and, unlike the Samian white glaze-slip, is apt to wear off through use or age. Among the designs fish and flowers are most prominent. These seem to be derived from the lovely embroideries for which Skyros has long been famous. Indeed Skyriot embroidery alone among Greek embroideries employs human figures, ships and scenes from daily life as designs. The interaction of the two crafts is obvious. The drinking mug shown here is typical and not exceptional. They are made by the hundred and sold for a few pence apiece. Their porousness keeps the drink in them cold. They are the usual drinking vessel in every Skyriot café and restaurant.

In the white designs employed on Skyriot pottery one can detect the influence of Turkish art. And the Skyriots are thought to have emigrated from Thrace some three centuries ago⁴ to the island. In Thrace they would have come under Turkish artistic influences. Certainly their love of flower designs and of fish can be related to sixteenth-century Turkish decoration.

Skyros has in recent times been largely spoiled by attracting the attention of Athenian folk-lore and folk-art enthusiasts. But even they have not affected its pottery, though they have taught the Skyriots

³ I am informed by Mr D. W. S. Hunt, Fellow of Magdalen College, to whom some of the information about Siphnos is due, that he has seen a caique of 13 tons displacement take on a cargo of Siphnian pots for Chios and Santorin. The same boat on another occasion took pottery to Megara and returned with rezinato wine, and again to Santorin for a similar exchange of cargo. The range of the boat was not great but it had been also to Myconos and once to Salonika.

⁴ Prof. R. M. Dawkins, *Journal of Hellenic Studies*, xxvi, 205. The ancestors of the present Skyriots are here shown to have migrated from Thrace to the island after its depopulation by the Venetian Foscolo who transported the original inhabitants to Corfu in 1645. The new emigrants brought with them a northern mode of embroidery design and certain peculiar pagan festivals which survive today in Thrace.

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how to mass-produce the mulberry-wood furniture for which the island is famous as well as to revive in sickly form the embroidery which had virtually died a natural death a generation or more ago. I have visited the island several times and on my last visit noted with some alarm that a local enthusiast had invented a wholly new style of pottery, as odious as it was bogus, decorated with unfired designs in oil-paint, made for sale to tourists only. It is as well to note this lest visitors should be lured into thinking it to be autochthonous. The red wares with white slip are the only wares made on the island that are genuinely native.

Skyriot wares are hardly exported at all, except to Athens for the benefit of the folk-art enthusiasts. I have never met them outside the island except at the little town of Kyme on the east coast of Euboea opposite Skyros. Here it is natural to expect them, for Kyme is the nearest mainland town to the island.

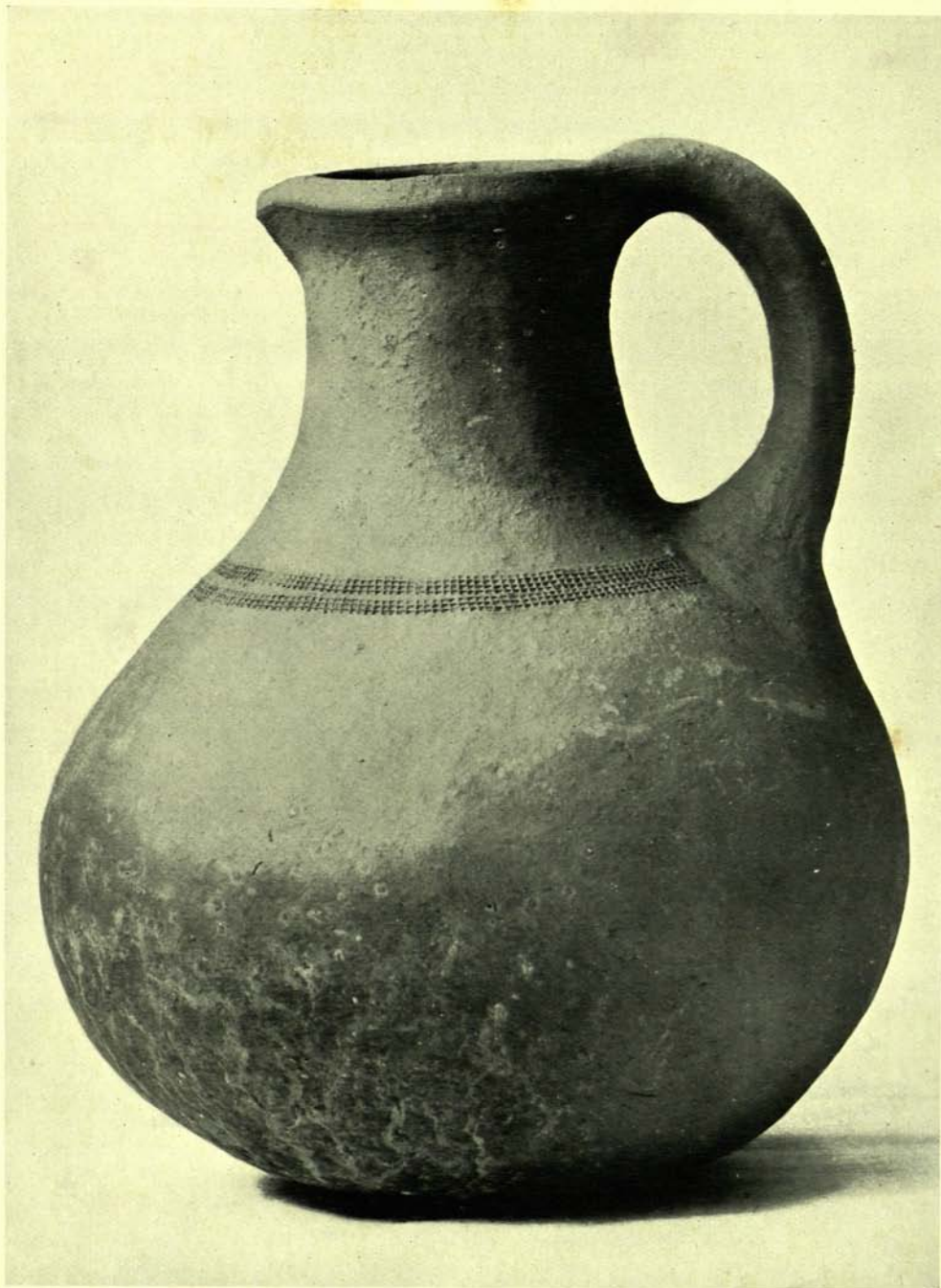
Corfu is a large producing centre but its wares do not spread so widely as those of Chalkis. Corfiot wares are glazed and not unlike Chalcidian but usually of more harmonious colours. I have seen them in Mykonos, side by side with Chalcidian, and they are common in the shops of Athens.

Cyprus is a rich centre of production, but its wares are not exported at all to the Aegean. The Cypriot water jug (PLATE I) shown here is the commonest vessel made in the island and the most typical. The glazed wares are derivative from Turkish and Byzantine and demand a special study to themselves. They are all of very high quality. But Cyprus now, as always, lives apart from the rest of the Greek world.

For Asia Minor and the Turkish region the great centre is Çanakkale in the Dardanelles. Here the lingering recollection of a debased Byzantine style (for which the port was long famous down to as late as the 18th century) has led to the growth of potteries which can be said, without any reservation, to be among the worst in Europe. Bad glaze, usually of the 'marbled' type common in the decadent Byzantine age⁵ badly applied, hopeless form and faulty firing combine to produce what are complete atrocities. In the hands of some of the more imaginative Çanak ceramists the most amazing ceramic *tours de force* are built up—great water jugs in which animal heads and bodies, human heads and writhing natural forms combine as external applied decoration to make 'works of art' which bring joy to many an Anatolian home but which would disgrace a Margate parlour. Simple Turkish peasants save up

⁵ D. Talbot Rice; *Byzantine glazed pottery*, p. 48.

PLATE I



CYPRIOI WATER-JAR (BOUGHT IN NICOSIA) WITH TYPICAL SHAPE AND DECORATION
OF CYPRIOI BRONZE AGE POTTERY. (See p. 467)

PLATE II



1. SAMIAN MUG ; 2, BARREL-SHAPED SKYRIOT MUG. (See pp. 470-1)

PLATE III

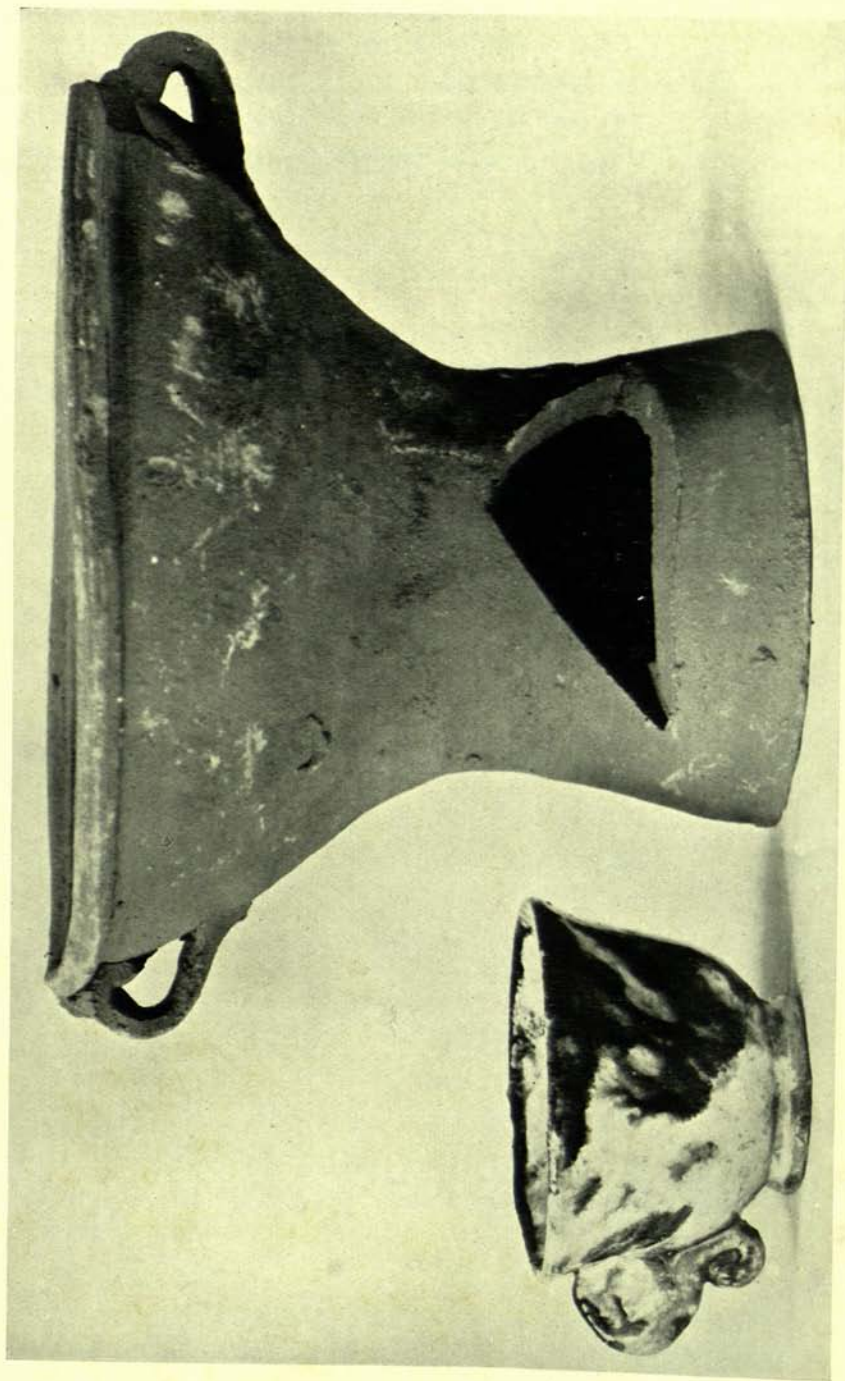


1, SAMIAN PLATE WITH DESIGN IN TOMATO RED ON WHITE. (See p. 470)



2, SAMIAN YACOURTI-DISH (left) AND JUG. (See p. 470)

PLATE IV



1, COFFEE-CUP, ÇANAK-KALÉ. (See p. 473) ; 2, SIPHINIAN CHAFING-DISH. (See p. 470)

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for years to adorn their mantelpieces with these strange abortions. At Čanak-kalé the art of the ceramist can be said to be seen dying in the extreme agonies of technical collapse. I show only one example here (PLATE IV, 1), a miserable little coffee cup, grossly smeared with a mottled glaze of dull purple, green and sickly white, badly bubbled and unevenly applied. The handle is no more than a worm of clay vilely stuck on. Definitely the Turk has nothing like the sense of form possessed by the Greek.

The above notes are no more than notes. I have made no attempt to investigate the subject in full. But if the facts I have collected may help others to investigate I shall have achieved my purpose. For, as is fairly obvious, much that concerns the study of ancient Ceramic can be illuminated by reference to modern methods and conditions.

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WALLOP, GUOLLOPUM AND CATGUOLOPH

The Editor of *ANTIQUITY* has referred (vol. v, pp. 236-8) to a much neglected passage in the *Historia Britonum* concerning a 'discordia', or civil war between Guitolinus and Ambrosius fought 'twelve years after the reign of Vortigern' at Guollopum. This locality he identified with some place on the river Wallop, in Hampshire, which he suggested in a footnote might possibly be the 'fontem Galabes in regione Gewisseorum' where, Geoffrey of Monmouth avers, the messengers of Aurelius Ambrosius found Merlin.

In *ANTIQUITY*, VI, 83, he added a note of caution to the effect that the place-name Wallop also occurs in Shropshire. In vol. VII, 479-80 he gave Sir John Rhys's explanation of the word 'Guollopum' (*Y Cymmrodor*, 1905, XVIII, 73, note 1) as a Brythonic adjective not understood by the scribe responsible for the Latin. 'It proves', Rhys continued, 'to have been *guolom* pronounced *guolov*, the exact equivalent of Med. Irish *falum*, Mod. Irish *folamh*, Scot. Gaelic *falamh* 'empty'; compare Welsh *gweili* 'empty', Breton *guollo*, *gulio*. The antiquity of the gloss is suggested also by the use of *pp* as the equivalent to *ph* which is here inexactly used for *v*'. From this Sir John Rhys concluded that the passage in Nennius¹ should be translated 'And from the reign of Vortigern to the civil war of Guitolinus and Ambrosius there are twelve years, which is Empty, that is, Empty of battle'. Faced with this emptiness the Editor did not continue the discussion. It is impossible to believe that a period of twelve years between the fall of Vortigern under the impact of the mutiny of the 'Saxon' foederati and the raids and invasions that followed their success could possibly have been described by any Briton as 'empty of war'. It is, of course, possible to scrap the whole passage as Professor Ferdinand Lot has done in his disappointing study of Nennius and the *Historia Britonum*, where he describes it² as an 'allusion to a completely unknown event, doubtless invented'. Such a course, however, involves the rejection *en bloc* of all British and Anglo-Saxon traditions concerning the events of the 5th and 6th centuries in Britain, and throws us back on the

¹ *Hist. Brit.* cap. LXVI.

² *Loc. cit.* p. 207. 'Allusion à un événement complètement inconnu, sans doute inventé'.

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uninformative Gildas and his 'tract for the times', a commination sermon rather than a history.

Another explanation which I venture to offer appears to me both to preserve the original translation and at the same time to confirm Sir John Rhys's derivation of *Guollopum* and Guest, and the Editor's identification of this place-name with the Hampshire Wallop. For this I am indebted to Mrs K. Bowman, whose family have been long resident at Middle Wallop and are well acquainted with local lore. The river Wallop, a 'chalk stream', ran dry this summer after the spring drought. It has done so only twice in the last 29 years but in several dry summers it has been reduced to a mere trickle of water. The word 'Guollopum' would thus mean 'empty', as Rhys suggested, and the adjective would be applicable to a river which sometimes dried up entirely and was sometimes reduced to a thread in dry years. The last words of the relevant passage in the *Historia Britonum* should therefore be translated—'which is Empty, i.e. the Battle of the Empty (river)'.

I am aware that Dr Ekwall derives Wallop³ from A.S. *Wiell-hop* or *Waell-hop* meaning 'valley of the stream'. But I cannot help feeling that the distinguished philologist's treatment of early British sources has been neglectful on occasion. In this case he makes no mention of the reference in the *Historia Britonum*. Other cases occur to one, e.g. the reference to Arthuret without any allusion to the entry in the *Annales Cambriae*, and still more the explanation of the Cumbrian Carwinley as a hybrid between 'Caer' and an Anglo-Saxon name such as Wendla,⁴ a derivation that omits all reference to Guendoleu, a chief of fame in early Welsh poetry wherein he is associated with this part of Britain, who also figures in the Harleian genealogies and in the *Vita Merlini* where he is called Guenoleus. It is surely possible that the Shropshire Wallop, or that other Wallop which the Editor believes to be somewhere 'in the Thames Estuary'⁵ though he has forgotten its exact location, may be derived from the A.S. *Wiell-hop* and that the similarity of the Hampshire river-name may be merely a coincidence. As for the objection that no exact Welsh parallel to Sir J. Rhys's hypothetical *guolom* (*guolov*) is known, can any one assert that no such form could have been used by the Britons of southern England in the 5th century?

³ *Concise Oxford Dictionary of English Place Names*, p. 470.

⁴ *ibid.* p. 84.

⁵ *ANTIQUITY* VI, 480.

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The other considerations in support of the selection of the Hampshire locality as the scene of the battle which brought Aurelius Ambrosius to the leadership of the Britons may be summed up briefly. Tradition associates Ambrosius with Hampshire, and the derivation of Amesbury from his name seems at least as probable as that which explains it as the Burg of Ambr, an unrecorded personal A-S. name which 'may be postulated on the strength of Ambrosden, Amesbury, Ombersley and OHG Ambricus, Ambrico pers. n'.⁶ It is possible that Guitolinus (Lat. Vitalinus) was of the House of Vortigern. The *Hist. Britonum* (c. XLIX) gives Vortigern's father's name as Guitaul (Vitalis) and calls his grandfather Guitolin (Vitalinus) and names 'ran in families', then as now. But whether Guitolinus was or was not of Vortigern's kin he was fighting for the leadership, which Vortigern had lost, and the obvious scene of such a campaign would lie either in that part of southeast Britain which the 'Saxons' had not yet mastered, or in the Severn Valley near Builth from which Vortigern may have come and where his descendants retained local power. Now we know that A-S. tradition claims no conquest of any part of Hampshire before the beginning of the 6th century, i.e. a generation after the probable date of 'Catguoloph'. Had the invaders cleared British power from Hampshire by 467 A.D., which seems to be the approximate date of the victory of Ambrosius, the identification of Wallop and 'Guollopum' would be excluded. But they had not. The only rival to the Hampshire Wallop as the scene of 'Catguoloph' is therefore the Shropshire Wallop, and the linguistic evidence is against this identification unless it can be proved that the Shropshire name was applied to a river which ran very low or dried up periodically, an unlikely phenomenon in a district with an abundant rainfall and no chalk. Mr Egerton Phillimore's identification of Wallop with the Voluba of Ptolemy, which he identifies with Golden near Grampound in *Y Cymmrodor* (1892, XI 24-5) is historically improbable. No early tradition connects Ambrosius with Cornwall, nor is that region associated with Vortigern and his house. And the historian might well ask what Ambrosius was doing so far from the main theatre of events.⁷ The Hampshire Wallop therefore appears to be identifiable with 'GUOLLOPUM'.

PHILIP P. GRAVES.

⁶ *Concise Oxford Dictionary of English Place Names*, p. 9.

⁷ If, as the writer supposes, Arthur, after winning fame in the North as a military leader, was hired by various British kings to bring his band of cavalry to their assistance against the Saxons or local rivals, his traditional ubiquity in the region extending from Cornwall to Strathclyde is easily explained.

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HEBRIDEAN SURVIVALS

In the very interesting article upon Hebridean survivals, (ANTIQUITY, September 1938, pp. 261-89) Dr E. C. Curwen might have cited the traditional ballads recording the exploits of the Norse invaders and the Gaelic heroes who resisted them, which still certainly survive in Barra and South Uist, although usually the language of them is now only about half intelligible. They are described and collated by Dr Reidar Th. Christiansen in *The Vikings and the Viking Wars in Irish and Gaelic Tradition* (Oslo, 1931). Dr Christiansen remarks (p. 5) that

‘the most extraordinary feature of this tradition is its continuity, which is almost unparalleled. It has its source almost as far back as the time of the Vikings themselves, or at least as we know them in Ireland, and it has lived on into our own time. In the old manuscripts legends and songs about the Norsemen are to be found, and down to 1900 the ballads, such as that concerning King Magnus of Norway, were familiar throughout the Isles, where no doubt fragments of this poetry are still known’.

On the other hand, it is at least doubtful if the ‘Clan System’ can be cited as a primitive survival; the whole popular conception of the Scottish Clan has been seriously challenged by such scholars as Professor Eoin MacNeill and Dr G. A. Hayes-MacCoy, and in any case there are good reasons for thinking that the ‘Clan System’, *i.e.* semi-independence of local territorial magnates, only came into existence after the destruction of the centralized government of the lordship (or kingdom) of the Isles. The fact that intelligent Islemen regretted the downfall of the lordship, and were sensible of the evil consequences of it, is attested by the 17th century historian Hugh MacDonald, who says

‘After the death of Angus (Aonghus Og, assassinated in 1490) the Islanders, and the rest of the Highlanders were let loose, and began to shed one another’s blood. Although Angus kept them in obedience while he was sole lord over them, yet upon his resignation of his rights to the King, all families, his own as well as others, gave themselves up to all sorts of cruelties, which continued for a long time hereafter’. (*Scott. Hist. Soc.*, 2nd Series, v, 52).

Instigated, one might add, by the policy of King James VI of playing the local magnates off one against the other.

Retrogression, not simple survival, is clearly to be seen here, and one of its consequences upon the cultural life of the people was that the themes of the written literature eventually were reduced to surviving only orally.

J. L. CAMPBELL.

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CROP-MARK AT PORTCHESTER CASTLE (PLATES I-II)

During a visit to Portchester Castle early in June I observed, from the ground, a very remarkable crop-mark. This consisted of a pair of parallel lines of parched brown grass with offset 'buttresses' at regular intervals along their outer sides. There was a 'buttress' at each corner and a brown line across the narrow (northern) end. So plain and distinct were the marks that one almost wondered whether they might not be due to some recent disturbance of the soil. Enquiry on the spot, and subsequently of H.M. Office of Works, the custodians of the site, revealed the fact that the markings were well known, and that they appeared quite regularly in dry weather. At the time of my visit (though a little rain fell that day) there had been a remarkably prolonged drought, lasting almost unbroken for five months.

There can be little doubt that, as had already been concluded, the marks indicate the foundations of a medieval tithe-barn. There is of course a Norman castle in the northeast corner of the Roman fortress, and a fine Norman church in the southwest corner. This is not the place to describe these monuments, which (with the exception of the church) has been done in the Office of Works Guide obtainable on the spot. It will be enough to say that although the core of the outer wall and bastions is undoubtedly Roman, the outer (Roman) facing had already been removed, doubtless by the Norman builders, and then patched up again by them. This accounts for the peculiar and quite un-Roman horse-shoe shape of the bastions.

In addition to the air-photograph, taken by Major Allen (PLATE I), another (PLATE II) was taken on the ground by Dr Bersu, to whom I am indebted for permission to publish it, and also for some of the observations recorded. It seems worth while reproducing this ground-photograph because it shows that, under favourable circumstances, one can sometimes *see* crop-marks as plainly on the ground as from the air. But, although visible, they can only be seen to perfection from the air. Actually the marks were sharp and distinct enough to be planned by tape-measurement on the ground; and in order to have them recorded permanently, I had them specially surveyed. The resulting measurements were plotted on the Office of Works plan, and will be inserted on the next edition of the large scale Ordnance Survey map.

It need hardly be added that the cause of the parching of the grass is the presence of stone foundations immediately below the surface, which restrict the amount of moisture and thus affect the growth of the

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grass. This is a common phenomenon and was well known long before air-photography was possible. One finds observations of it recorded even in the 17th and 18th centuries. Lawns are very susceptible to this form of parching, and the area at Portchester is laid out for tennis-courts. A similar phenomenon is to be observed at the Meteorological Station at Kew, where the foundations of Sheen Priory (so one presumes) have been revealed on a bowling-green and photographed, but unfortunately the photograph was from too great a height.

O.G.S.C.

CAUSEWAY, TARIK EL JEMIL (PLATE III)

Last August, when flying round the island of Jerba, off the north coast of southern Tunisia, I suddenly observed a causeway which I had seen on the maps during a previous visit, but which neither then nor since have I been able to inspect on the ground. The causeway runs from the mainland near Zarzis across a shallow tidal inlet, some two miles wide at this point, to Jerba, which it reaches at a point not far south of Guellala, the great centre of pot-making, whence amphorae and other vessels are exported to all parts of the adjacent mainland. I have searched in vain for any published account of it; but foreign archaeological publications are notoriously difficult to obtain in the libraries of this country. No doubt somewhere there is to be found a satisfactory description of it. Meanwhile it seems better to publish the accompanying air-photographs (taken with an ordinary Vogtlander camera, size $2\frac{1}{4}$ in. \times $3\frac{1}{4}$ in. [6×9 cm.]). They are not good, but the best that could be obtained under the circumstances.

According to Barth the causeway is called Tarik el Jemil (the Camel's Path). From the air it seems to be a stone or rubble causeway, nearly awash. At the point (near the left) where it crosses a deep channel there would seem, from the photograph, to be the remains of some sort of a bridge. On either side are large growths of sea-weed, forming livid green blotches that stand out brilliantly against the chocolate background of the lagoon.

The causeway must surely be of Roman origin, for it is hardly likely that either the Turks or Arabs would have had the art to construct so obviously useful a work. It has not the undeviating straightness usually associated with Roman roads; but the circumstances are exceptional. Roman remains abound on the adjacent mainland coast. Jerba itself was called Meninx and is reputed to be the island of the lotus-eaters. It is now, as no doubt formerly, intensively cultivated

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with palms, olives and corn ; and round its eastern shores are innumerable elaborate fish-traps, consisting of settings of stakes and nets. Along the shore of the mainland a mile or two inland are a number of small square forts, set at regular intervals apart. From the air one could not see enough to decide on their age, but one would imagine that they are mediæval or later rather than Roman.

The whole region abounds in interesting remains, not the least being the curious modern vault-shaped houses, best seen in the towns of Medenine and Ben Gardane ; from the air it is apparent that Houmt-souk, the market-town and port of Jerba, consists of a core or nucleus of such buildings, overlaid and partly obscured by later flat-topped buildings of the normal oriental type.

Jerba is little known in this country. Of those to whom I have described it since my return, not one had ever heard of it before. It is practically free from tourists, and those in search of an interesting holiday might do worse than make for Gabes, the nearest place to stay at. During spring and early summer the climate is excellent ; even in August the heat is not by any means unbearable, and the bathing is ideal. A short distance inland, however, away from the sea, the heat becomes very trying. Indeed the town of El Azizia in Tripoli, 150 miles ESE of Jerba, holds the world's record (136° in the shade, 13 September 1932). During January and February the weather is cold and sometimes very rainy.

O.G.S.C.

WATTLE HUTS (PLATE IV)

Dr Cecil Curwen's article in the September number of *ANTIQUITY* describes a primitive type of stone building still in use in the Outer Hebrides and in Skye. That buildings of this material were constructed in prehistoric times in all parts of Great Britain and Ireland is quite certain on archaeological grounds ; we need only cite Skara Brae, Chysauster and the brochs and earth-houses ; and for still earlier time we have the chambered long barrows as evidence that stone was used at any rate for the houses of the dead. In Bede's time, however, building houses of stone was regarded as quite definitely a Roman custom, and it is frequently contrasted with the British and Scottish custom of building houses of wood or wattle. Instances are quoted in Plummer's *Bede* (Oxford, 1896, II, 101-2) and in Reeves's *Adamnan* (Dublin 1857, 106). Many of the earliest churches in Britain were built of wood or wattle ; and there is no evidence that any of the

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monastic buildings in Iona in Columba's time were of stone. That both stone and less durable materials were, however, in contemporary use from the earliest times is archaeologically certain, and is also to be inferred (for a later period) by Bede's description of the stone church at Whithorn (*insolito Brettonibus more*). Perhaps the Roman method implied the shaping of the stone and the use of mortar, as opposed to dry-stone walling; but this is not stated by the authorities.

In certain parts of England the framework of walls was of timber; the intervening spaces were filled with mud or clunch sometimes reinforced with wattle hurdles. Many of these 'mud cottages' still survive, and the lath and plaster technique of East Anglia is merely a variation of it. In Scotland and Ireland it was still in use during the 18th century, but the absence of suitable earth caused turf to be used as a protective covering instead.

Pennant visited Jura in July 1772, and illustrates some round conical huts, which are reproduced on PLATE IV.¹ He has left the following account of the 'sheelins':—'Ride along the shore of the Sound [of Islay]: take boat at the ferry, and go a mile more by water: see on the Jura side some sheelins or summer huts for goatherds, who keep here a flock of eighty for the sake of the milk and cheeses. The last are made without salt, which they receive afterwards from the ashes of sea-tang [sea-weed], and the tang itself which the natives lap it in.

'Land on a bank covered with sheelins, the habitations of some peasants who attend the herds of milch cows. These formed a grotesque group; some were oblong, many conic, and so low that entrance is forbidden, without creeping through the little opening, which has no other door than a faggot of birch twigs, placed there occasionally: they are constructed of branches of trees, covered with sods; the furniture a bed of heath, placed on a bank of sod; two blankets and a rug; some dairy vessels, and above, certain pendent shelves made of basket work, to hold the cheese, the produce of the Summer. In one of the little conic huts, I spied a little infant asleep, under the protection of a faithful dog'. From here Pennant walked across a 'large plain of ground, seemingly improveable, but covered with a deep heath, and perfectly in a state of nature'; and 'after a walk of four miles, reach the Paps'.

¹ *A Tour in Scotland and Voyage to the Hebrides*, 1772, London 1790; vol. I, p. 246, plate xv. It is not clear from Pennant's description where exactly these sheelins were situated. They seem to have been on, or not far southwest of, the southern shore of Loch Tarbert.

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Wise² describes precisely similar huts used by Irish charcoal-burners. 'The form of these huts', he says, 'probably resembled those still used by the hereditary charcoal burners of the present day, who are required to reside in the forests of Ireland, during most parts of the year, engaged in the preparation of charcoal for gunpowder (fig. 10, not reproduced here). . . . They were built on a rising ground, were ten feet in height and about twelve in diameter; and were constructed of a number of straight branches of trees, the extremities of which were thrust into the ground in a circle, and the other ends fastened in the form of a cone. Over this grass, faggots were placed in a way to overlap each other. These huts had no other opening than the door, which was two feet and a half wide; each accommodating three men, their beds being marked 1, 2, 3, [on his plan], and the floor boarded by dressed logs of wood, a little raised above the ground. At the end of the passage and opposite the door was the fireplace for heating the hut and preparing their food, and . . . spaces for stowing away their personal effects. . . . They burnt charcoal in the fireplace, and were aware of the noxious nature of the "nitrogenous" vapours, which, however, had free egress through the chinks formed by the spaces between the faggots. They were careful, they said, in the selection of a dry elevated place for their huts, as they found it healthy, particularly in the dry season'.

Another, rectangular, type of 'basket-house' was constructed on the west coast of Scotland in the 18th century, and has been described in a manuscript belonging to the Society of Antiquaries of Scotland and now in their library at Edinburgh. It should be observed that the method of 'thatching' the sides with turf is exactly the same as that said above to have been used by the Irish charcoal-burners. The description is as follows:—'From I Columkill I returned again to Mull, and after travelling from the west side to Lettermore on the north-east side I ferried over the sound to Mungastle, from thence I took my road through Ardnamurchan and Moidart to Arasaik. . . . They sow small black oats, four row'd barley, some rye and potatoes, the principal production of the country is black cattle, sheep, goats, butter and cheese, with some small horses. The inhabitants lead miserable lives, both with respect to their food and habitations. The houses in which they live they call basket-houses. The method of building them is this, they first make out both breadth and length of the house,

² *History of Paganism in Caledonia*, London, 1884, xi.

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then drive stakes of wood at nine inches or a foot distance from each other, leaving four or five feet of them above ground, then wattle them up with heath and small branches of wood upon the outside of which they pin on very thin turf, much in the same manner that slates are laid. Alongst the top of these stakes runs a beam which supports the couples and what they call cabers, and this either covered with turf heath, or straw'.³

These descriptions may be found useful to excavators who are faced with the problem of reconstructing, from a sometimes bewildering mass of post-holes, the plan and superstructure of prehistoric dwellings.
O.G.S.C.

DOLMEN GRAVES IN BULGARIA

South of Bourgas and along the Black Sea is a series of long parallel valleys, divided by thickly wooded ridges. This is the district of Strandja and Stara-Planina, which extends to the banks of the Maritza. Difficult of approach, with poor roads, this district was inaccessible even in ancient times. Rich with the remains of various cultures and very little known to scientific men (owing to the fact that foreign influences could not penetrate it), the Strandja district has retained some of its oldest folk-customs. For instance, the 'Nestinarstvo' (dancing on fire on St. Helen's day) is still practised in Bulgaria.

The Thracians, especially the tribe 'Asti', with its centre at Viza, are the oldest inhabitants of this district of whom we know anything. The Greek colonization began about the 7th century B.C. Their colonies were interspersed among the Thracian settlements. According to Xenophon (*Anabasis*, VII, 5) the Thracians practised piracy. Among other things he notes that those who lived about Thrace divided up the land by means of frontier-posts, and everyone had the right to take possession of the things found on his own piece of land. It is interesting to remember that such a division of the land existed in Bulgaria until 1878, when Bulgaria was freed from the Turks. In the old part of the town of Vassiliko are the remains of a small castle, where resided a pirate family which lived on the booty pillaged from the vessels along the coast.

The Romans did not exert much influence over this district. Strandja was probably able to preserve its first settlers for a long time.

³ *Remarks made in a Tour through several of the Western Isles and West Coast of Scotland*, by Mr James Robertson. Read before the Society of Antiquaries of Scotland, 1788. Preserved in volume 2 (fol. 23) of Unpublished Communications.

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With the appearance of the Goths, however, the ethnographical character of the district along the Black Sea coast began to change, and this transformation continued until the beginning of the Slav and Bulgar invasions (6th and 7th centuries).

In Bulgaria dolmens are numerous only in the Strandja mountains, Sakar mountains, and in the eastern Rhodope, and there only where gneiss, from which large slabs can be obtained, is found.

According to certain information dolmens used also to be found in the Balkan and the Sredna Gora mountains, and a few south of the Balkan mountains, but they were all destroyed long since. In excavating these dolmens, the excavators either could not find anything, or did not pay sufficient attention to the remains of pottery—the best evidence for determining the date of these interesting prehistoric monuments. Originally the dolmens were buried under mounds, but in the course of time all the earth and small stones were removed; in some parts they are still encircled by a peristalith, which, made of small and large stones, is sometimes three metres wide, and in the shape of a circle or that of a square. The biggest peristaliths are 10 to 12 metres in diameter, and the smallest are from 2.50 to 5.00 metres.

Practically all these dolmens had been erected on the crests or slopes of small hills, and were usually on non-rocky ground, but often they were adapted to the conditions of the locality. In most cases the foundations were of clay, and only in very rare cases a few flat stones were placed to form the foundation. Usually they are of local material, but some are made of stones brought from a distance. Some were erected on the spot where the stone was quarried. They are made of roughly shaped stone slabs and have single or double chambers. The single-chambered dolmens consist of four large slabs covered by a fifth. Generally these stones are placed in the ground in the form of a square. The two side-stones are a little inclined, and the slab facing the sun has an opening, rectangular below and curved like an arch at the top.

The double-chambered dolmens are relatively larger. They consist of two dissimilar, but attached, chambers, the front chamber being the smaller, and are constructed with great architectural ability. The stones are firmly set in the ground and it seems that great attention was paid to fitting them together. The inner side of the stones is smooth, and in some parts one can even notice straight lines. Before the entrance of the double-chambered dolmens are square-shaped flat stones, which very probably formed something like a corridor. The

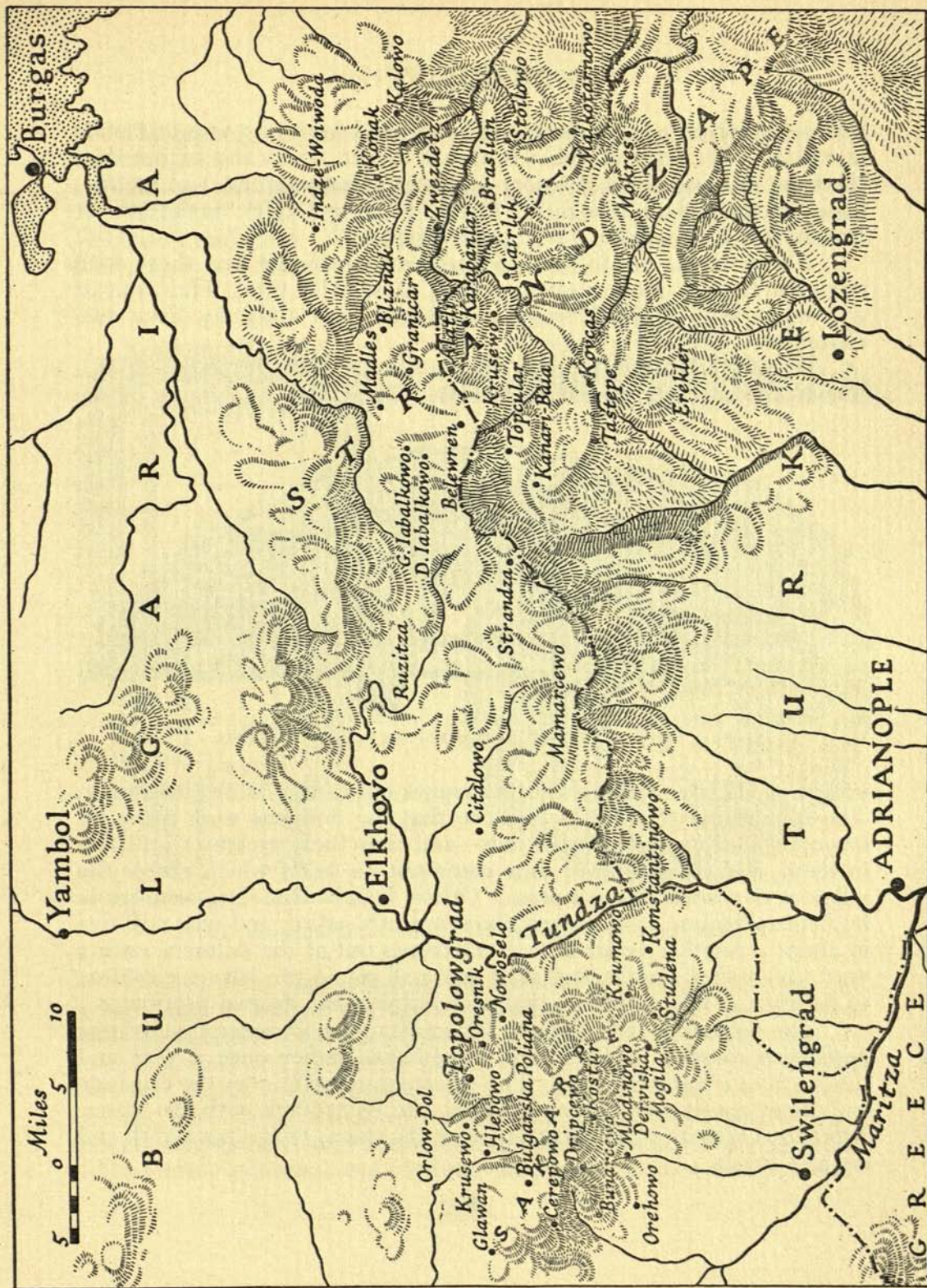


FIG. 1. BULGARIA, SHOWING SITES OF DOLMEN GRAVES

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stones vary from 1 to 3.5 metres in length and from 0.25 to 0.50 metres in width. The back chamber is always longer, wider and higher than the front one (*e.g.* back chamber 2.20 metres long—front, 1.50 metres; back chamber 1.80 metres wide—front, 1.66 metres wide; back chamber 2.20 metres high—front, 1.80 metres high).

The dolmens mostly face southeast or southwest and those with one chamber are more numerous than those with two. Thus, out of 474 examined, 410 are single-chambered, and only 64 have two chambers.

Practically all the dolmens are mutilated. The preservation of a few is due to certain national beliefs. Thus, the inhabitants of the

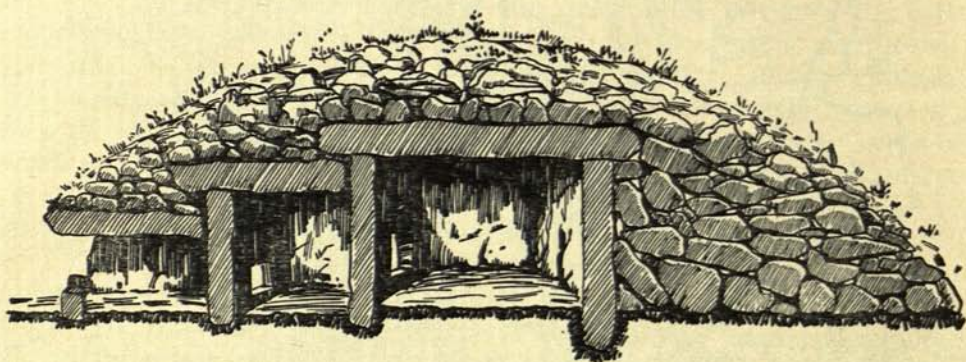


FIG. 2. TYPE OF DOLMEN-GRAVE, STRANDJA PLANINA, BULGARIA

village of Hlebovo believe that fire comes out of the dolmens at night. The inhabitants of Belevren believe that the dolmens were made by dragons—human beings with tails—and that these creatures still live in them, and from time to time come out—a belief which causes the villagers to respect the dolmens. Others believe that they were made by hellens (giants) who walked about entirely naked, and who still live in them. Another belief is that fire comes out of the dolmens once a year, on a definite night, and after going all round the village it returns to its place. Yet another is that each dolmen has its own proprietor.

The dolmen at the village of Bunarchevo has a comparatively large peristalith round it. There the inhabitants gather once a year and drink 'Shara' (grape juice). The priest pours water over the capstone and, after reading a prayer, sprinkles the bystanders with the water. After the ceremony the villagers sit on the stones of the peristalith and eat and drink.

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The bodies of non-baptized babies are buried in the hills around the dolmens.

Most of the half-destroyed dolmens and dolmen-mounds are near the villages of Guerdeme (Hlebovo), Krushevo (Kavuralan), Saranli (Orehovo), and Enia. Thus there are about 95 dolmens round Guerdeme, 47 round Saranli, and 74 round Krushevo.

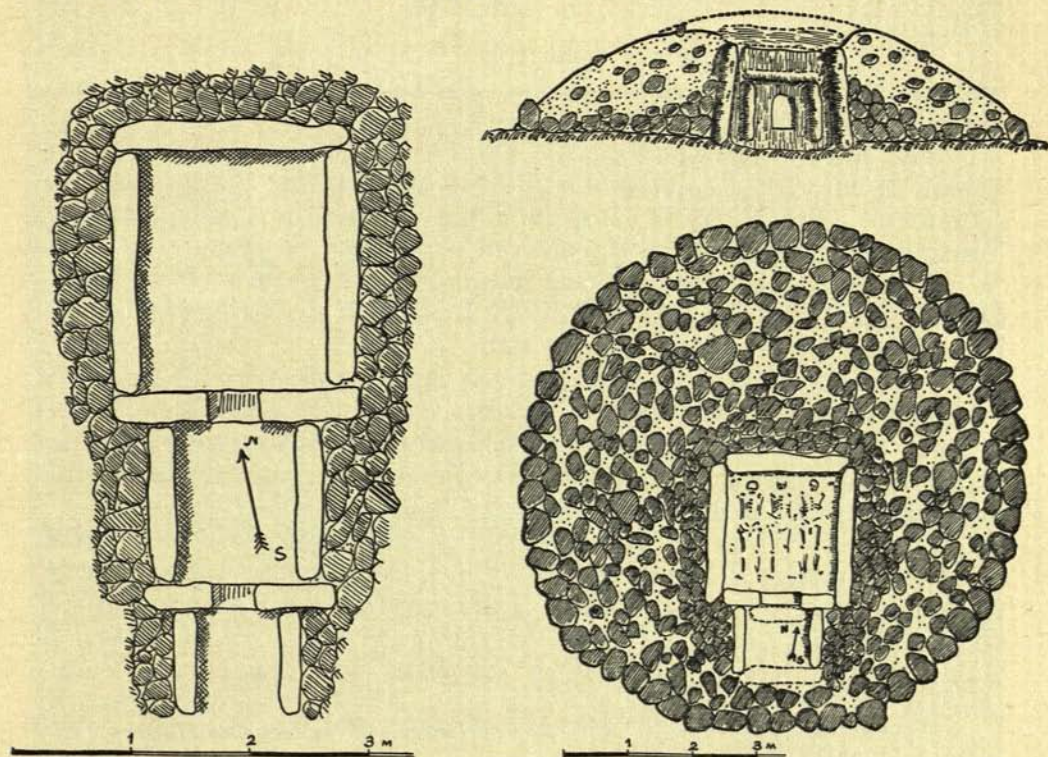


FIG. 3. PLANS AND ELEVATION OF DOLMEN-GRAVE, ENIA, BULGARIA

The keeper of the Prehistoric Department at the National Museum in Sofia, Mr V. Mikoff, has lately studied the remains of the dolmens at Enia, north of Svilengrad and the Maritza river. The highest mound at Enia is 1.40 metres high ; the rest vary from 0.60 to 0.80 metres in height with a diameter of 8 to 16 metres. All the dolmen-mounds here are covered with earth and encircled by peristaliths ; they are single-chambered and have only one corridor. The fragments of hand-made pottery found are from pots made of imperfectly refined

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clay, as a result of which, when baked, they turned a dark grey or dark red colour. Most of the pots had a handle and were decorated in a style known already from other prehistoric sites in Bulgaria.

The remains of three human skeletons, found lying side by side with the sherds of a few pots, were discovered in a dolmen near Enia. All the 78 dolmens found at Enia were situated on the southern slope of the hill.

The Bulgarian dolmens differ from those in some other countries, but they very much resemble those of the Caucasus, dating to the first half of the Bronze Age.¹

The cultural remains found in great abundance near the dolmens, as well as near Enia, correspond to those found in the South Thracian settlements, the Rhodope and in some villages of north Bulgaria. These date from the 8th to the 6th centuries B.C.

The Bulgarian dolmens are tombs. The Thracians of Sakar, Strandja mountain, and East Rhodope buried their dead in such tombs between the 8th and 6th centuries B.C.

Judging from what we know about these people we find that they could be no other than the well-known Odriz tribe, which about the 5th and 6th centuries B.C. succeeded in uniting many other Thracian tribes into a single group, created a powerful state, and left to us the best monuments of Thracian art.

Finally I wish to mention the dolmen-tomb which was discovered at Mezek,² dating to the 4th century B.C. Judging from the district where the latter was discovered, it is thought that its prototype was the dolmen-grave. Another reason for this conclusion is the fact that only at Mezek have tombs with a 'dromos' and chamber been discovered.³

IVAN VELKOFF.

Director of the National Museum, Sofia

EXCAVATIONS AT LOUGH GUR, CO. LIMERICK

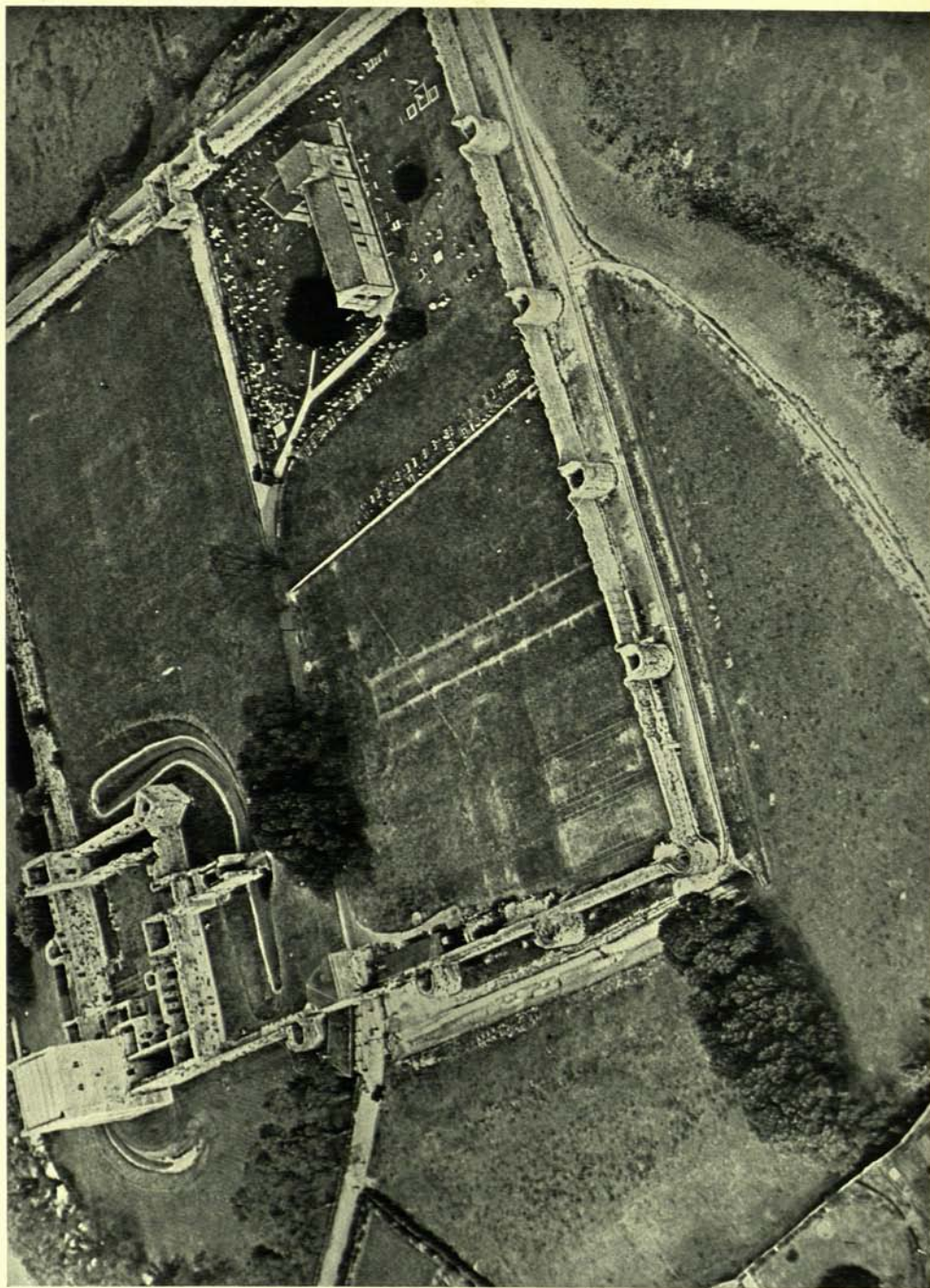
The third season's excavations at Lough Gur, Co. Limerick, which began in June are still in progress. The excavations are being conducted as part of the Government's Employment Schemes under the supervision of Professor Seán P. Ó Ríordáin, assisted by other archaeologists.

¹ A. M. Tallgren, 'Sur les monuments du Caucase', *Eurasia*, IX, 5; *ANTIQUITY*, 1933, VII, 190-202.

² *ANTIQUITY*, 1937, XI, 300-5.

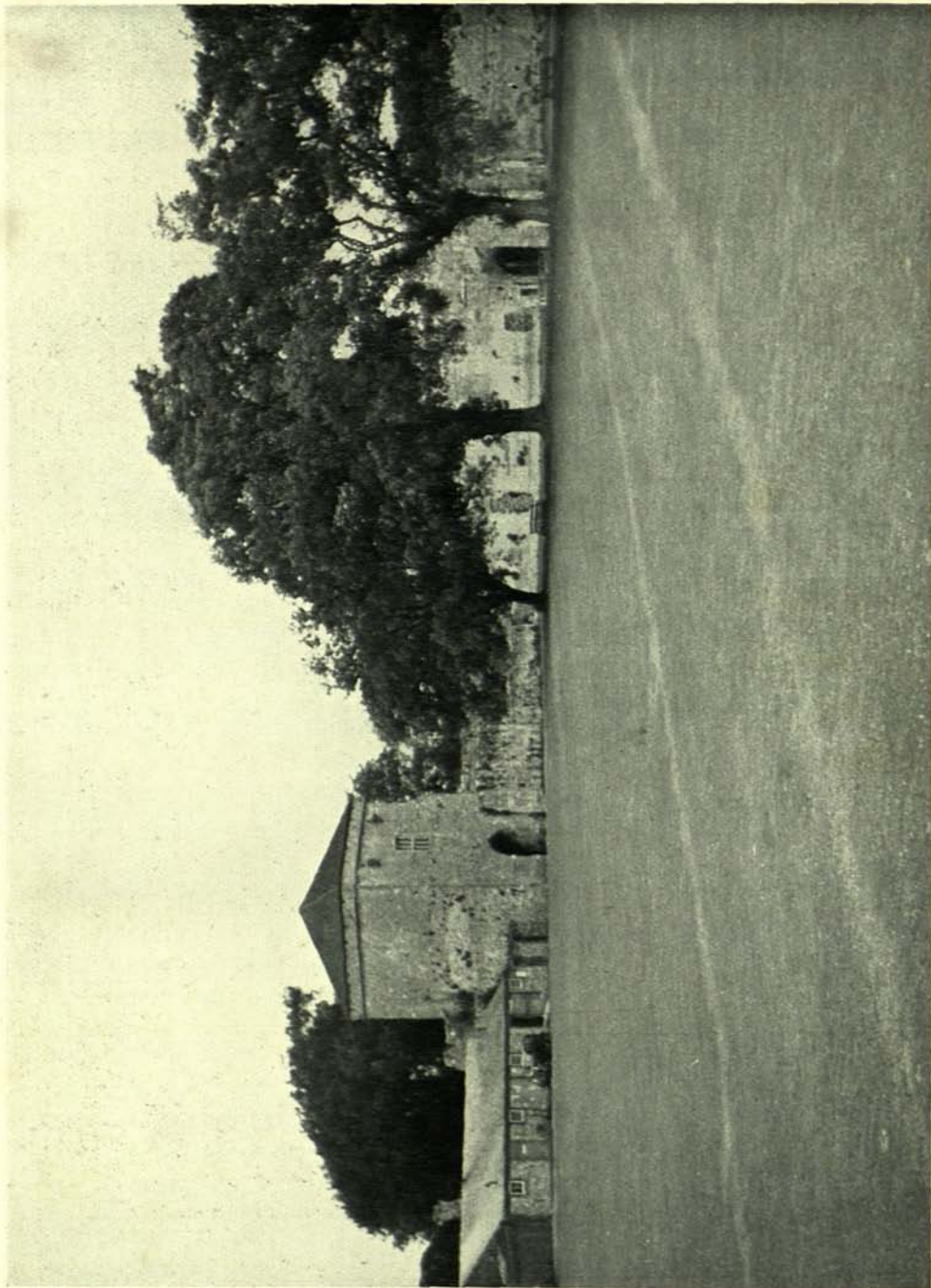
³ So far as is known nothing about the dolmens of Bulgaria has been published in English.

PLATE I



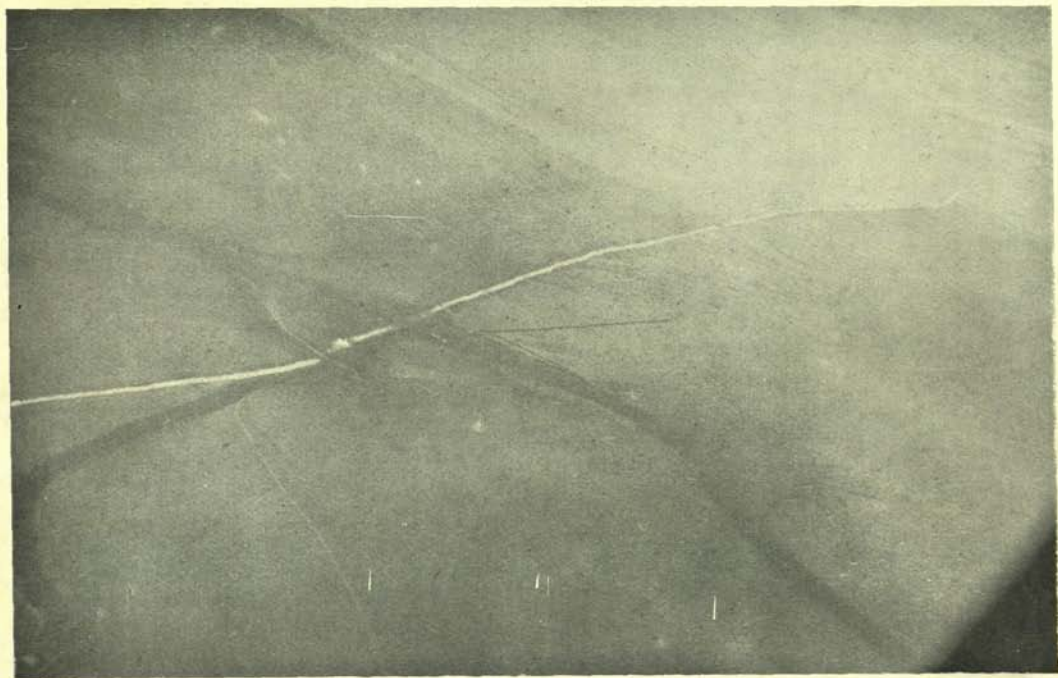
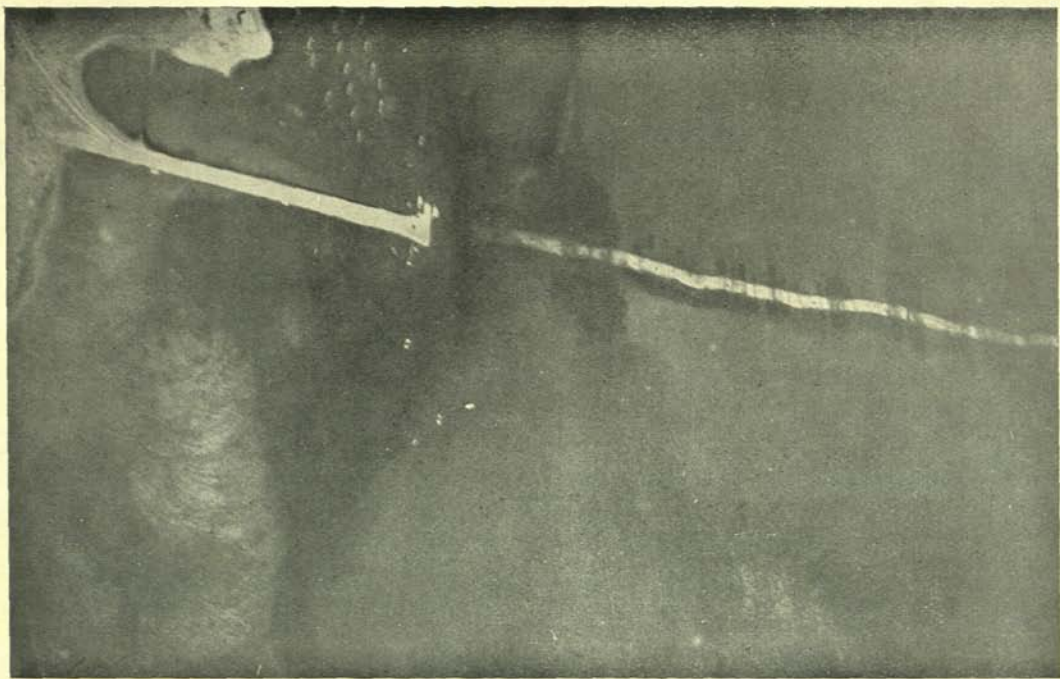
CROP-MARK OF BUILDING AT PORTCHESTER CASTLE, HANTS, SEEN FROM THE AIR. (See p. 478)
Ph. Major G. W. G. Allen

PLATE II



CROP-MARK OF BUILDING AT PORTCHESTER CASTLE, HANTS. (See p. 478)
Ph. G. Bersu

PLATE III



TWO AIR-PHOTOGRAPHS OF THE TARIK EL JEMIL, A CAUSEWAY ACROSS THE LAGOON
BETWEEN JERBA AND THE TUNISIAN COAST. (See p. 479)

Ph. O. G. S. Crawford

PLATE IV



FIG. 1. BASKET-HOUSES IN JURA, 1772. (See p. 481)
After Pennant



FIG. 2. BLACK HOUSE, ISLAY, 1772. (See p. 481)
After Pennant

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Last year one of two stone forts on Carrigally Hill, on the eastern side of the lake, was investigated ; this season the principal monument being excavated is the second (southern) stone fort and a series of attached house-sites. This fort, though appearing much less imposing than the northern one before excavation, is proving in many respects to be more interesting. The fort walls, which had become almost completely covered over, were found to be about fifteen feet thick and built of massive well-shaped blocks of stone, and the space enclosed was roughly circular with an internal diameter of 120 feet approximately. The entrance was found on the eastern side and is an interesting feature, being particularly well-built. It is five feet wide and at either side is a recess in the stone work into which were slid the two halves of the gate, which closed the entrance. Outside the entrance is a paving of large stones which covered also one side of the approach through the walls. The other side was not paved with large stones, but was cobbled with river pebbles at a lower level. It would appear that when the fort was in use the cobbled surface was used for the horses of the fort dwellers, while the paved path was that used by the inhabitants themselves.

Within the fort, stone paving was found in various places. This represents the floors of the ancient houses and it, as well as such remains of the walls as are available, show that the houses consisted in general of a series of rectangular rooms which were placed together to give an irregular plan. In some of the rooms hearths were found, while outside the houses were traces of other fires in various places, there having been one very large fire just inside the rampart on the eastern side of the fort. A long rectangular house stood also immediately outside the southern side of the rampart, and had evidently been so built that the face of the fort wall was used as one wall of the house.

On the northern side of the fort and lying between this fort and the one excavated last year are the remains of a group of houses with yards which give evidence of a settlement attached to the fort. The discovery of these houses is of importance for the study of early economic and social conditions in Ireland, because almost the only habitations known hitherto are found within fortified sites and it is probable that these Lough Gur houses are only the first of many early houses yet to be discovered in various parts of the country and situated outside forts or completely unattached to such fortified sites. The houses are of different types. All had stone walls and at least one had also a series of wooden posts of which the post-holes were discovered

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inside the walls ; these posts evidently served as additional supports to which were affixed the timbers of the roof which rested on the top of the stone walls.

The ' finds ' consist mainly of implements and ornaments of everyday use : iron knives, spear-head, nails, rings, hooks ; stone spindle whorls, whet-stones, querns, stone mortars, stone axes, hammer stones, loom weights ; flint scrapers and knives ; bone pins and needles, bone spindle whorls, bone combs, scoops ; fragments of a bronze vessel, pins and brooches, rings, glass beads. Outstanding finds are a brooch of silvered bronze with interlacing ornament, a bronze animal-head (zoomorphic) mount, a bronze pin of the type known as a hand-pin. One of the bone combs bears a pleasant ornament of animal heads. A coin found in one of the houses has been identified by a British Museum expert as an imitation of a Roman coin of the reign of Constantius (4th century). Such imitation coins remained in use to a much later date than that to which the originals must be assigned.

A find of considerable interest and importance is a small hoard of Viking silver ornaments consisting of seven pieces ; three fragments of bracelets, a ring and three ingots. The ingots show that the hoard was, or had been, the property of a metal-worker and the fragments of bracelets were obviously intended to be melted down for reworking. The hoard was found in a space among the stones of the inner face of the rampart.

The fort and house-sites may be dated by the finds to the Viking Period—9th and 10th centuries.

A megalithic grave (' dolmen ') known popularly as ' the Giant's Grave ' is also to be excavated at Lough Gur.

Reviews

THE FRAME OF THE ANCIENT GREEK MAPS. By W. A. HEIDEL.
American Geographical Society, Research Series, no. 20.

In this book Mr Heidel disclaims any attempt to prove a thesis, but he puts forward a theory to which he has so fully committed himself as to appear, to the present reviewer, to have left his critical faculty in abeyance. The problems of early Greek cartography can only be treated satisfactorily by one who is both a classical scholar and a master of the history and principles of mathematical geography, and Mr Heidel lacks the latter part of this double equipment. Nor could the present writer undertake the task of reviewing his book were it not that ancient authors are cited only in translation. Here lies, of course, a fruitful source of fallacy. A literal translation of an obscure passage relevant to cartography is often meaningless, and the translator's interpretation or gloss is at least as likely to represent his own views as those of the Greek author. Briefly put, Mr Heidel believes that the Frame of the oldest Greek (that is to say Ionian) maps was a rectangle, having its four corners defined by the summer and winter sunrise, and the summer and winter sunset respectively. That these four points marked out on the visible horizon were important in ancient astronomy is not denied. But Mr Heidel declares that they were not merely indicative of direction but were actual places, in India and elsewhere, which he attempts to identify. The lines joining the pair of summer points formed the north 'tropic', that joining the winter points the south 'tropic', while midway between was the 'equator', identified with the axis of the Mediterranean Sea, and passing between the Pillars of Hercules. Lines running north and south, joining the sunset and sunrise points in pairs formed the east and west boundaries of the 'frame'. Nowhere does the author concern himself with the elementary principle that a 'place' is defined by distance as well as by direction, and that the farther away he takes the sunrise or sunset 'place', the farther apart become the north and south 'tropics'. Moreover he does not even determine the azimuths of the solstitial sunrises and sunsets at Miletus, where presumably, the system or 'frame' first arose. In his sketch-map, the northern tropic runs through the mouth of the Tanais, the southern through Syene. The description of this frame-work, it is claimed, occurred in the lost writings of Ephorus, a younger contemporary of Plato, but the claim rests on the assertion that the critical passage of Ephorus is preserved 'more or less completely' in the *Christian Topography* of the late Latin writer, Cosmas Indicopleustes. The

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passage is not, however, quoted or critically examined, and Cosmas, as is well known, was attempting to frame a cosmology that should be accordant with the strict letter of Holy Writ. Having evolved a framework and filled it in to his satisfaction, Mr Heidel tells us that this was the map which Alexander used in his Persian campaign, and that from the same map Herodotus had read off his descriptions of Africa and Europe, while Aristotle based upon it his remarks about the Ister. 'As the actual source of the river [Ister] Herodotus names the city of Pyrene. A city of that name is unknown, and a city moreover is not especially (*sic*) appropriate as the source of a river. Aristotle . . . makes the river rise in the Pyrenees . . . One suspects that both authors were referring to maps on which the name Pyrene occurred, and that Herodotus carelessly took it for the name of a city'. Herodotus was not only careless but dishonest, if indeed he was reading from a map the information which he claims to have obtained in various (and quite other) specified ways. But he was not alone. Certain passages in Aristotle's *Meteorology* are difficult to fit in with Mr Heidel's views and 'raise the question whether we are to think of the Stagirite as singularly careless in geographical matters'. Hippocrates was another student of the Ionian map, which 'no doubt' was a main source of his treatise *On Climate, Waters and Situations*. Of this map-reading there is 'clear evidence' in his statement that 'Asia Minor lies midway between the sunrises'. 'This leaves no room for doubt (continues Mr Heidel) that the sunrises were supposed to have a definite position and that Asia Minor was supposed to lie along the equatorial axis of the map'. If by 'definite position' Mr Heidel means 'position at a point', then according to his sketch-map, summer sunrise was about a thousand miles east of the Caspian Sea, winter sunrise about half that distance east of the Indus delta, but we suspect that he uses 'position' in a sense all his own. Hippocrates in his reference to Asia Minor was explaining its admirable climate, and since it is well known that the various 'quarters' of the heavens (or horizon) were associated by the Greeks with 'airs' of specific qualities, it is probable that his meaning was that the Greek lands lay between the 'cold and dry' northeast, and the 'hot and dry' southeast: but to establish such an interpretation a closer study of the text would be necessary.

Mr Heidel follows his discussion of the 'ancient Greek map' with an examination of the theory of a spherical earth, and puts forward the view that the earth was thought of as a flat disc until about 400 B.C. In spite, however, of a wealth of citations, the weakness of the author's mathematical and astronomical concepts leaves the reader doubtful at every point of the validity of the arguments employed, and his contemptuous denial of astronomical knowledge to the Egyptians (p. 101) affords further justification for withholding assent to his views.

E. G. R. TAYLOR.

REVIEWS

LONDON WALL THROUGH EIGHTEEN CENTURIES: a history of the ancient Town Wall of the City of London, with a survey of the existing remains. By WALTER G. BELL, F. COTTRILL and CHARLES SPON. Issued for the Council for Tower Hill improvement, 30 Trinity Square, E.C. 3. pp. 124, 70 figs. and map. 3s 6d.

Old walls are always fascinating, even the simple lichen-covered field-walls of the West. But the walls of towns are not only a source of pleasure to the beholder; they contain raw materials of history that can be read by the practised eye of the experienced student. They are historical documents and have all the value of original manuscripts. Yet they have been strangely neglected everywhere. It was left for Englishmen to elaborate the history latent in the walls of Rome and Arles. But archaeology, like charity, begins at home, and there are many unsolved teichological problems still left in our own country. The oldest known town-walls of Britain have been articulated by their discoverer, the excavator of Maiden Castle and Verulamium. The next in succession (at Wallingford, Wareham and Cricklade) still await investigation; and remains of others (such as those which once existed at Tamworth, Bedford and Stamford) may yet come to light in the course of digging or slum-clearance. The walls of many towns of Roman origin (such as Bath, Winchester and York) have been incompletely or not at all examined.

In this country the study of the past has to be made to appear romantic if it is to appeal at all effectively to the inhabitants. Paw-marked tiles and mosaic pavements have a glamour that opens hearts and purses more easily than pollen-analysis and potsherds. It is therefore remarkable that up till now 'no book has been published dealing solely with London Wall'. The present book is an excellent handbook, summarizing what is known about it. It will be found useful by everyone, for it sticks to facts, tells you the sort of things you want to know (a rare favour), and is eminently readable. Its only defect, as it seems, is one for which the authors can hardly be held responsible, namely, that it might so well have been much bigger. To produce a big book was not their intention; yet that is what is really required if the riches of the Wall are to be exploited to the full.

But, having said this, and recorded our opinion of the usefulness of this handbook, may we be allowed to go beyond our terms of reference and commit a misdemeanour which quite recently we pilloried in this very journal?—namely, give brief publicity to an idea which is suggested by the subject here deal with. What is really wanted, surely, is an Atlas of London consisting not of facsimiles of old plans (useful as the existing Atlas is), but of a series of plans based upon the secure framework of the Ordnance large-scale map, showing London as it gradually developed from the earliest times onwards. The first

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few plans would have to be small and sketchy, but from 1500 onwards there is ample material for such an attempt. Cadastral plans of parts of the city show the buildings in great detail and on a scale so large that, with uniform reduction, the errors would largely disappear. We have seen such plans, now in the possession of the Goldsmiths' company and other private owners; and there are enough to make possible the compilation of a plan that would be no more and no less incomplete than, let us say, Sir Leonard Woolley's plan of the City of Ur. Such an attempt has already been made (by Colonel G. S. C. Cooke, R.E.) and was published as an inset to the Ordnance Survey Map of seventeenth century England. Documents that have come to light since it was published (and there must be dozens still unrevealed) have amply confirmed its accuracy; and the production of a really adequate map of London itself (if not of all its environs as well) before the Great Fire is merely a matter of a little application, involving some familiarity with cartographic methods.

By such a series, upon a uniform scale (or series) comparisons between one period and another are possible, as they are not when merely facsimiles are available (useful though these are, we repeat, for their own peculiar purposes).

But we have wandered rather far from the subject under review and apologize for the digression. We commend the book heartily to our readers, and congratulate the authors on their public-spirited work.

O.G.S.C.

EXCAVATIONS AT TEPE HISSAR, DAMGHAN. By ERICH F. SCHMIDT.

With an additional chapter on the Sasanian building by FISKE KIMBALL.
Philadelphia: University of Pennsylvania Press, 1937. pp. XXI, 478,
177 figs. and 79 plates. £3 7s 6d.

The book under review is essentially an excavation report, and at the very outset Dr Schmidt insists on the distinction between the field-worker and the culture-historian in his study—or should one say today public library? Any absence of comparative material and discussion that the book may show is hence advised; instead we are given an immediate publication of results.

Rapid publication is undoubtedly an important factor—other excavations might learn a lot from Pennsylvania in this respect—but it is to be questioned if a too rigorous division of labour, a copying in a cultural sphere of the methods of heavy industry, is ideal, and in a book that is so lavishly produced all but the very specialized readers feel inclined to ask for more in the way of 'conclusions' than can be found here. This is not to belittle the value of the Tepe Hissar excavations, however, nor the quality of the archaeological work and its presentation, which could hardly be more accurate or fuller.

A short preliminary chapter is devoted to trials in and around Damghan, made to ascertain the whereabouts of the Parthian Hecatompylos. This was

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not located, and in each sounding the earliest remains were fairly late Islamic. Only the *Tarikh Khane* at Damghan proved to be early Islamic; its construction is still in the Sasanian manner.

The greater part of the book is devoted to a detailed account of the prehistoric Tepe Hissar. Three distinct cultures and eight continuous cultural phases are distinguished. Hissar I (pp. 21-105) consisted of a medley of small chambers of undistinguishable character, and the most important finds were of painted pottery. This could be divided into three classes—the first hand-made, the second wheel-made with animal ornament, and the third akin, but with more developed ornament, often of real aesthetic quality. Copper objects as well as stone implements were found. The numerous burials in this, as well as in later strata, are very fully described, with a sketch diagram for each burial, and the pottery is excellently published. The physical remains will be dealt with in a future volume, which should afford information of the first importance, for 782 burials were uncovered in the second season.

The buildings of Hissar II (pp. 106-54) do not seem to have been quite as extensive as those of Hissar I, nor were they so well preserved. The period was distinguished by a characteristic gray pottery, the appearance of which is attributed to an invasion from the North (p. 112), but painted ware continued to appear alongside it.

Hissar III (pp. 155-296) presented a more imposing building than either of the other layers, and the finds were also more impressive, in that alabaster vessels were plentiful, and there were some fine objects of early Bronze Age type, actually made of copper. The gray pottery of Hissar II continued, but showed certain definite changes.

The relative chronology is examined in a separate chapter (pp. 297-326), in which Schmidt concludes that Hissar I preceded the proto-Elamite of Susa or Jemdet Nasr in Iraq, and that Hissar II was more or less contemporary with them. Hissar III is provisionally dated to the first half of the second millennium B.C. If the lowlands were the main centres of culture, rather than the uplands of Persia, one would incline to date all the periods at Hissar rather later.

A separate mound concealed an important Sasanian palace, described in chapter IX (pp. 327-46) and discussed by Fiske Kimball in chapter X (pp. 347-50). His reconstruction is an improvement on an earlier one of Gerasimoff, but in view of our scanty knowledge of Sasanian architecture it cannot be regarded as final. Of the two dates suggested for the palace, the third and the fifth-sixth centuries, the later one seems far more likely on the grounds of the style of the stucco reliefs.

The book is admirably produced and illustrated, and comes as a welcome addition to our none too abundant material on ancient Iran. D. T. RICE.

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DER DONAULÄNDISCHE UND DER WESTISCHE KULTURKREIS
DER JÜNGEREN STEINZEIT (Handbuch der Urgeschichte Deutschlands, 2). By WERNER BUTTLER. Berlin: Walter de Gruyter, 1938. pp. 108, 24 plates, 5 maps. RM. 6.80 (5.80 unbound).

In its main outlines the story here revealed is familiar to readers of ANTIQUITY: the spread of Danubian peasants brought the elements of neolithic culture to Germany and the Rhine basin, there to be enriched by contributions made by relatives of our own Windmill Hill population arriving from the West. But nowhere is the story so fully documented. The intensive German research of the last five years, here recapitulated, has filled in many gaps; the mechanism of Danubian expansion has been disclosed; the picture of neolithic civilization presented is amplified by details of domestic architecture and economics that are quite novel. The whole is illustrated by a wealth of excellent photographs, sketches, plans and distribution-maps. The production of such a compendious and yet readable textbook with all its half-tone plates and even coloured maps for the trifling price of RM. 5.80 is an example to British and American publishers.

Moreover, Buttler's completely objective book relieves us of uneasy doubts as to the feasibility and legality of publishing genuinely scientific work in the Third Reich. The chronological framework is not based on subjective typologies that can too easily be adjusted to fit theories dictated by political prejudice, but on public facts impartially observed and recorded observations made at meticulous excavations, and on an intensive study of the concrete relics, aided by the co-operation of botanists, geologists and zoologists. At many sites the sequence of cultures has been established by the intersection of pits, and unimpeachable synchronisms are attested by the interchange of distinctive ceramic and other products. The scheme, deduced from fresh observations of unprecedented accuracy, in general agrees very satisfactorily with that set forth in the Chronological Table published in ANTIQUITY, June 1932. It looks, however, as if the groups defined by the later spiral-meander, stroke-ornamented and Rössen wares should all be transferred to Period II when the Theiss ('Lengyel') culture was already developed in the Middle Danube basin. (An early Theiss vase from eastern Hungary found in a Silesian settlement with stroke-ornamented ware is one of the most convincing and dramatic synchronisms cited). And the celebrated Jordansmühl cemetery in Silesia is certainly to be treated as parallel to the Copper Age of Hungary (period III). The absolute dates assigned to the several cultures also agree closely with those suggested in the Table. But Buttler recognizes that such figures are just guesses; in the light of the latest Mesopotamian discoveries they seem less plausible in 1938 than in 1932.

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In discussing the origins of the several cultures Buttler is equally unprejudiced. The origin of the oldest Danubian complex is left rather vague, but from the standpoint of Germany definitely southern; the Theiss culture is admittedly Hungarian. But stroke-ornamented and Rössen cultures are explained as due to the adoption of a Danubian equipment by mesolithic survivors in Bohemia and Central Germany. The derivation of the Rössen ceramic style from that of the northwest German megaliths and the consequent affiliation of the cultures it defines to the Nordic, which had become a dogma of German prehistory, is emphatically and convincingly refuted; Rössen equipment and architecture is fundamentally Danubian; the similarity of its pottery to the northwest German is due perhaps to a common mesolithic substratum.

Buttler's book is the first published volume in a series which will cover the whole of German prehistory from the Old Stone Age to the Vikings. The names of the contributors—Schwantes, Sprockhoff, Kraft, Zeiss—in themselves guarantee the scientific character and high standard of the volumes to come. When completed they will provide a complete conspectus of the prehistory and protohistory of the best-studied region in Europe, conferring an inestimable boon on students and amateurs. As they should find many readers outside Germany we might suggest to the editor that, not only for the sake of precision, the scientific names of animals and plants should be given. V. G. CHILDE.

THE MIND OF THE ANCIENT WORLD: a consideration of Pliny's *Natural History*. By H. N. WETHERED. Longmans, 1937. pp. xv, 302. 12s 6d.

The purpose of this interesting book is to introduce Pliny to English readers, who have not the time or the knowledge necessary for exploring his voluminous writings in the original. It gives a clear impression of the miscellaneous contents of the *Natural History*, classified under numerous headings, which include science, painting, sculpture, medicine, 'travellers' tales', etc. The writer is familiar with wonder-tales from Herodotus to Mandeville, and his quotations from English literature range from Shakespeare to Dickens. He does full justice to the superhuman industry of the compiler of this vast encyclopaedia of knowledge and legend, and notes the mixture of credulity and common sense which characterizes it. There are occasional lapses—it is a rather serious inaccuracy to say that Scipio Nasica *invented* the water-clock, an instrument which was in use centuries before his time; and misprints such as *anapanomenos* seem to indicate that the proof-reader has forgotten his Greek; but such minor blemishes do not detract from the book's peculiar interest. The quotations (over 150 in all) from Philemon Holland's translation are an attractive feature. To the many readers who may be stimulated by reading Mr Wethered's book

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to turn to the original for further information on any of the topics which he discusses, it will be a matter of regret that the only references given are to Holland's work, which is not readily accessible to every scholar. In the case of other classical and modern authors who are frequently quoted, no references are given at all—and not all of us can at once turn to the required page in Herodotus or Seneca.

J. F. DOBSON.

PERSEUS : a study in Greek Art and Legend. By JOCELYN M. WOODWARD. Cambridge University Press, 1937. pp. XIII, 98, 35 illustrations. 6s 6d.

Mrs Woodward has chosen an interesting method of introducing beginners to the study of Greek Art. Taking as her subject the familiar story of Perseus and the Gorgon, about which, as she says, many of us know little more than we learned in early days from Kingsley's *Heroes*, she begins by collecting the literary material of the story from early authors, who are dated as far as possible. The legend is then illustrated by a selection of pictures ranging from primitive clay statuary of the 7th century, through the vases of the best periods, right down to Hellenistic and Roman representations. The author's opinion is that the artist—particularly the vase-painter—reflects the mental attitude of the ordinary citizen towards the legend; the development from the archaic grimness to the delight in beauty of form and composition corresponds to political and social changes.

From the short discussions of the technique of successive schools of painting which accompany the illustrations, we may gather a general idea of the development of art and artistic feeling through the ages. An interesting point is made by showing the influence of dramatic productions on the composition of some of the later groups.

J. F. DOBSON.

ARCHAEOLOGICAL HISTORY OF IRAN (Schweich Lectures, 1934). Par E. HERZFELD. London : H. Milford, 1935. pp. 112 and 19 plates. 7s 6d.

Nous avons peu de renseignements, avant l'époque de Salmanasar III (ix^e siècle avant notre ère), sur l'Iran préachéménide. A cette époque, les Médes et les Perses de race Aryenne sont installés sur le plateau, les premiers au Nord, les seconds au sud; et les Perses essaient en vain de secouer le joug des Médes dont ils dépendent. Sous les Achéménides on constate un profond changement dans les conceptions religieuses de l'Iran, sous l'influence de Zoroastre que M. Herzfeld date de Cyrus ou de Cambyse. Après la période des Parthes Arsacides, dont la domination a laissé sa trace dans de multiples temples 'du feu', la dynastie Sassanide préside aux destinées de la Perse, de 224 jusqu'à la domination des Arabes.

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M. Herzfeld s'est attaché au cours de ce volume, en partant des monuments que nous connaissons, à retracer le cours de cette histoire ; quelques rares que soient parfois ces monuments, ils suffisent à montrer la continuité du développement du génie iranien. Même pendant la période où l'hellénisme a été le plus intense en Iran, l'esprit oriental est préservé. A la période sassanide, malgré l'influence de l'art grécobactrien par exemple, l'art reprend certains des principes de l'art oriental. En somme, l'influence grecque, malgré ses progrès en surface, n'a jamais pénétré profondément en Iran, et la période sassanide est le prélude à la réaction qui replace la Perse dans la ligne primitive de son développement, qui favorise ses qualités purement iraniennes.

Si toutes les idées qu'apporte M. Herzfeld peuvent ne pas être entièrement acceptées, son livre, de lecture attachante, est une vue d'ensemble très originale sur le développement du foyer de civilisation qui a toujours tenu un rôle prépondérant dans le proche Orient.

G. CONTENAU.

ANCIENT CYPRUS. By STANLEY CASSON. *Methuen*, 1937. pp. 214, 16 plates, map. 7s 6d.

The revival of interest in Cyprus, which has taken place in the last decade, has made the lack of a popular handbook to the island's antiquities—as an introduction to Myres' 'Cesnola Handbook' and Gjerstadt's 'Studies'—a great handicap to both student and tourist. This book does for the remains of antiquity what 'Historic Cyprus' has done for the medieval monuments, but on a less detailed scale.

The period covered ranges from the earliest times to the Roman occupation, but the treatment of each period is by no means equal in detail, a restraint for which much praise is due. The age of the maximum external importance of Cyprus is well reflected, for the centre of discussion is largely focussed on that most dangerous of periods (for the non-expert), the Mycenaean.

The first chapter makes lamentable reading, as a record of vandalism and lack of care and of interest. The history of Cypriot archaeological exploration is not a happy one, but there are a few exceptions. Mr Casson does rather less than justice to Hogarth's *Devia Cypria*, which is not all waste to the field-worker. There is in this chapter an implied suggestion which is well worthy of further consideration—that the history of modern Cypriot pottery would be a profitable field of investigation.

The prehistory of Cyprus is rich and interesting, and we can only regret that 52 pages are allotted to it, for the Mycenaean period has thus reduced the treatment of the Neolithic, Early and Middle Bronze Ages. The author is surprised at the 'virtual failure' of the Swedish Cyprus Expedition to identify neolithic sites. If the excavations at Petra tou Limniti, Kythrea, Lapethos and

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Frenaros (not mentioned in this context) are to be thus regarded, well may surprise be expressed.

Mr Casson objects to the term 'preneolithic' as applied to Petra tou Limniti; but if the accepted definition of neolithic is to be retained, as against Albright's 'ceramolithic', no other term is possible—for surely a requirement of the 'neolithic' as understood at present is the ability to make pottery.

The problem of the appearance of the Early Bronze Age is discussed at some length, and several solutions are suggested—an interval of uninhabitation, a decline in population, in ideas and ability, or the superimposition of a new Early Bronze Age folk on the neolithic inhabitants. The apparent lack of continuity between the Neolithic and Early Bronze Age is stressed, but it is never suggested that the one could have developed from the other. If not, where did the Early Bronze Age come from? There is a generic connection with the west Anatolian wares, and perhaps with those of the southwest central Anatolian province, but it is sufficiently vague to be discussed without having to produce examples or parallels. Recent excavations in the Troad, at Kusura, in Cilicia, and at Alaca Hüyük have failed to advance the Anatolian connexion of the early Cypriot period beyond the nebulous—and in the Troad and at Kusura the evidence antedates the third millennium B.C. Similarly Syria, Palestine and Egypt are ruled out. But 'the forms of this new pottery are nowhere found so abundantly and in so much variety as in Cyprus'.

In Cyprus the study of the earliest phases of the Early Bronze Age and of the latest phases of the 'neolithic'—we may call it the chalcolithic—is still in its infancy. No really extensive excavations have been carried out on a neolithic site, and less than 80 tombs of phase 1 of the Early Bronze Age have been opened, in the island—it is not even certain that the so-called Early Bronze Age 1 is the earliest phase. Certain factors which Mr Casson puts forward as proof of the discontinuity are not quite correct. Not only do painted patterns occur in the last half of the Early Bronze Age (page 32) but in the first half a bichrome style of decoration was in use, obtained by reserved bands of buff against the red slip. Very distinct flat bases are to be found in the period, *e.g.*, at Arpera and at Vounous—(cf. Gjerstadt, 'Studies in Prehistoric Cyprus' pages 90–92)—and we now know that pronounced flat bases are the usual form for larger pots and for many of the smaller shapes in the earliest phase. While agreeing with Mr Casson that time will solve the problem, the reviewer believes that a strong case can be made out for the continuity from the Neolithic to the Early Bronze Age.

There is a scathing indictment on page 34 of the abilities or rather the productions of the Cypriot potters in the Early and Middle Bronze Ages. Yet he could often achieve pleasant shapes and sometimes real beauty of form and decoration.

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The last portion of the chapter brings the reader by way of the Middle Bronze Age to the Late Bronze and Mycenaean period, and thus to the great age of controversy; the review of the evidence is thorough but to the non-expert terrifying. Sometimes Mr Casson is rather harsh (pp. 44-50), but in the case of the chariot vases it appears that Prof. Gjerstadt will be justified.

The chapter on the Script is perhaps the most useful in the book, and is a great advance on previous knowledge. It is concluded that a mainland Greek connexion is to be sought for the origin. There is a table of the signs which have been recorded up to the date of publication. The chapter closes with a discussion of the signs on 'Mycenaean' vases, probably imported from Cyprus to Tell Abu Hawam in Palestine.

The evidence in favour of the equation *Alasia-asi*=Cyprus is studied. If this is to be accepted a very considerable degree of Hittite control of the island in the XIV-XIII centuries B.C. must be admitted, and archaeologically this raises some difficulties. The strongest point seems to centre round the question of the copper mines—and it seems impossible to deny that some of these were being worked during the Mycenaean period in Cyprus. In reference to the footnote on page 125 it may be worth recording that two ingots similar to that depicted on plate VIII are in a private collection in Famagusta, possibly from Enkomi, certainly from Cyprus.

There is an efficient index. The plates are well chosen and excellent and strike a pleasant balance between the objects and Cyprus itself. J.R.S.

THE ALISHAR HÜYÜK : seasons of 1930-32, parts I-III. By HANS HENNING VON DER OSTEN. *University of Chicago* : Oriental Institute Publications, XXVIII-XXX; *Researches in Anatolia*, VII-IX. Part I, pp. XXII, 283, 10 plates (6 in colours), 281 figs. 20 dollars. Part II, pp. XXII, 481, 26 plates (3 in colour), 513 figs. 35 dollars. Part III, pp. XXII, 496, 15 plates (5 in colour), 20 maps, 9 tables, 289 figs. 25 dollars. *University of Chicago Press*.

Alişar is at present the standard by which all early settlements in central Anatolia must be measured, for there is as yet no other site which covers the chalcolithic age, the early age of metal, the Hittite and Phrygian periods. Thus, while the history of the Hittites and Phrygians is amply illustrated, the prehistory of their forerunners is well represented: it goes back no further than the first appearance of metal in a country where neolithic antiquities have not been found except in the Troad, and where paleolithic remains are still scarce and uncoordinated.

Three volumes previously published have acquainted us with the Chicago University Expedition's discoveries up to 1930; three more, the subject of this

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review, embody the results of work done in 1930, 1931 and 1932, when scarcity of funds put an end to the campaign. During those later years certain important additions were made to our knowledge: the chalcolithic levels were explored, the fortifications traced, and the period of the Hittite empire fully investigated. In consequence, it is not only fresh finds which are now introduced to us, but facts which modify our whole outlook. In addition, we are presented with a comprehensive survey of the products of the excavation as a whole, with tables showing the sequence of types in pottery, statuettes and other objects. This survey is not only convenient but also necessary, since the order and nature of the cultures on the mound and city terrace of Alişar were misinterpreted in the former accounts.

It can now be proved that what used to be called Alişar III, with its 'Cappadocian ware', started earlier than Alişar II, recognized since 1931 as the period of the Hittite empires; while Alişar IV, originally believed to be Hittite, can safely be identified as Phrygian. New names must consequently be found for all stages: even Alişar I can be no longer, since it overlies chalcolithic deposits. The following table shows the system proposed by Dr von der Osten, and the most familiar of those it supersedes.

<i>New Names</i>					<i>Old Names</i>
Chalcolithic	..	..	..	..	—
Copper Age	..	..	..	..	Alişar I
Early Bronze Age	..	..	..	..	Alişar III
Hittite Empires	..	..	..	..	Alişar II
Post-Hittite-Phrygian	..	..	..	..	Alişar IV

In view of the modern reaction against the terms 'Bronze' and 'Copper' Age, so variously applicable in different parts of the world, so liable to inaccuracy unless all metal utensils can be analysed, his choice is unfortunate; all the more so since bronze, we are frankly told, was present in the 'Copper Age'. The situation is difficult for us and difficult for him by reason of his predecessors' unlucky experiments. A further complication is introduced by a difference of opinion between him and Dr Bittel concerning the latter's subdivision of Alişar I, well known to readers of *Prähistorische Forschung in Kleinasien*.

There are, however, many other problems which archaeologists must consider together with the author's own interpretation of them. It will be convenient to consider them chronologically.

The chief feature of the Chalcolithic Age was the production of fruit-stands resembling the Danubian ones in shape though not in fabric or decoration. It is as yet impossible to judge what connexion, if any, exists; nor can we safely assume that the stage to which they belong is contemporary with Troy I and other

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primitive Anatolian sites. It would, therefore, have been better not to discuss these in the same section. The succeeding phase ('Copper Age', Alişar I) is marked by monochrome wares, which, together with some of the small finds, have sufficient resemblance to those of the Hittite period to raise the question whether there was a fundamental kinship of population: Dr Bittel favours this view, with which I am personally in sympathy. Dr von der Osten opposes it, one of his reasons being that the skulls of the 'Copper Age' are dolicho- to mesocephalic, those of the Hittite period brachycephalic. The makers of the dark-on-light Cappadocian pottery ('Bronze Age', Alişar III) confuse the issue by arriving at the close of the 'Copper Age' and interrupting the sequence of monochrome wares.

Cappadocian seals datable to about 2000 B.C. occurring in deposits of undoubted Hittite character give a valuable fixed point for dating: here we are on solid ground. But few will follow Dr von der Osten in deriving the early Hittite empire from the east, the later empire from the west, since the civilization which both cover is too uniform. Moreover there are linguistic and ethnological arguments in favour of continuity which are supplied by Dr Göterbock, and, with truly scientific honesty, quoted by our author. The Phrygian period, after 1200 B.C., provides matter for study rather than for controversy, while the still later occupations of the settlement—Hellenistic, Byzantine, Osmanli—are comparatively unimportant.

So much for the material. It is presented on a more lavish scale than is usual with dig reports, for obviously no expense has been spared in illustration, or letterpress. The illustrations are welcome, though if the folding figures had been collected at the end of each volume, reading would have been less laborious. The text, however, suffers somewhat from the inclusion of unnecessary subjects: *e.g.* the chapter on history—ancient, medieval and modern—and much of the chapter on physical types by Dr Marion Krogman, whose nucleus of important conclusions is embedded in a treatise on anthropology which is marred here and there by dependence on popular archaeological text-books. Even the author's own discussion of the cultural relations of Alişar gives too much space to summaries of other sites without considering the parallels, significant and interesting though they may be, for individual objects. Another point which calls for criticism is the references, which naturally cannot all be brought up to date. It does not matter if only the 1930 preliminary report on Thermi is used, but the remarks on Trojan goblets (III, 420) require revision as they affect chronology. Warm gratitude is nevertheless due for the full and careful records of strata, architecture and objects found; the inclusion of specialists' reports on bones, coins, metal and other things; and the way in which information is generously and adequately placed at the reader's disposal.

W. LAMB.

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THE MATERIALS OF MEDIEVAL PAINTING. By DANIEL V. THOMPSON.
Allen and Unwin. pp. 239. 7s 6d.

This learned and scholarly book is typical of an author writing of his favourite pursuit. Mr Thompson's evident enthusiasm for the things he deals with lends his material a lively style that elevates it from a mere catalogue to a book which, given a certain interest in the subject, is quite pleasant to read.

Mr Thompson's writing has the characteristic thoroughness of his countrymen. In his book we learn the sources of the hundreds of pigments used in medieval painting; how they are extracted from these sources; how white of egg, gum, and other substances are mixed with them; why some pigments are better suited for tempering with one medium than another; how they are applied to the various grounds, whether walls, woodwork, canvas or parchment; and by what means they are preserved and kept in place when the picture is finished.

These are the main outlines of the book; they are lavishly filled in with details of chemistry and technique, and with apt quotations from works of art. As far as there is any deeper significance behind this erudition and painstaking attention to detail, it is that the medieval artist was at the same time a craftsman—a quality sadly lacking in modern artistic circles.

WAYLAND DOBSON.

STAINED GLASS OF THE XIITH AND XIIITH CENTURIES FROM
FRENCH CATHEDRALS. 19 plates in colour photographed from the
original glass with an introduction by G. G. COULTON, and text by MARCEL
AUBERT. B. T. Batsford, 1938. pp. 12. 10s 6d.

Dr Coulton characteristically and charmingly puts to his readers the point of view of 'medieval people' with regard to their church windows. M. Aubert gives a valuable and also short treatise on the evolution and technique of early stained glass. But the *raison d'être* of the book is the coloured plates. The cathedrals from which the windows are selected are Bourges, Le Mans, Chartres, Poitiers, Sens and Amiens. We are told that 'the plates are produced by the Iris Press, by direct photographic process from the original windows. They are the first accurate colour reproductions of these stained glass windows'. This claim to accuracy is well substantiated, and anyone who has seen the windows will be delighted to have these reproductions to study at leisure. To those to whom the glories of early French glass are unknown they should prove a revelation. The producers are to be congratulated on so satisfactory an achievement. We should like to see both the misprint and mistranslation on page 9 removed in the next edition.

DINA P. DOBSON.

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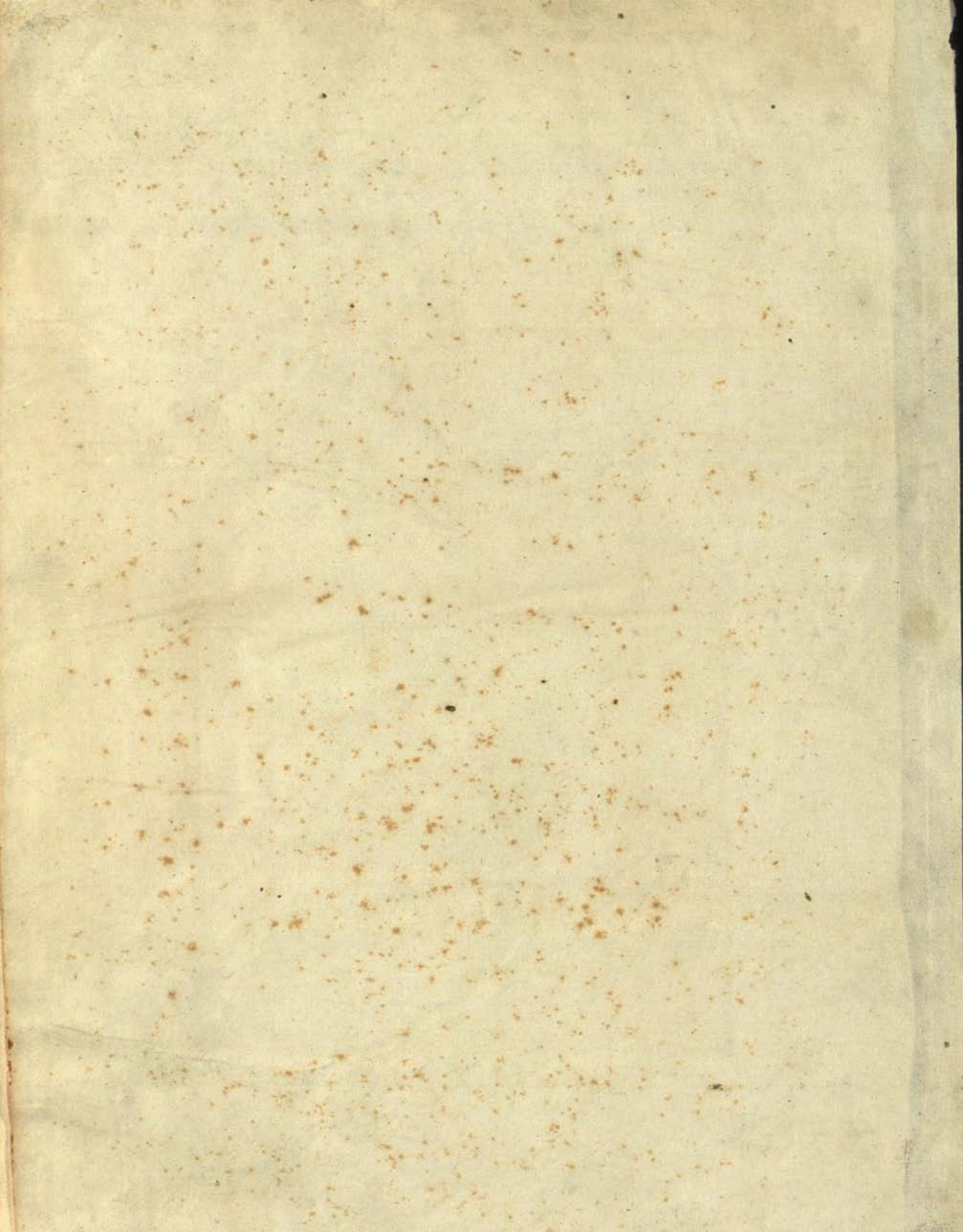
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CORRIGENDA

- page 270, line 30, for Orkney read Shetland
 „ 280, line 10, after Orkney insert and Shetland
 „ 291, line 2, for Sliventza, read Slivnitza
 „ 291, note 7, for Avezon, read Avezou
 „ 292, line 16, for Bruchenthal, read Bruckenthal
 „ 293, note 23, for Arnandoff, read Arnaudoff
 „ 295, line 31, for Jărgoviște, read Tărgoviște
 „ 295, note 36, for Mitteslides, read Mitteil. des
 „ 365, see note of correction to page 152.



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